

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF 2.5 R3  
Edition : 12.11.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/11F1900R368  
Type number : 0 460 414 076  
Customer Part-No. :

Customer-specific information  
Customer : SOFIM

Engine : 8140.27.2580/82

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: -  
(from BDC): -

Injection-pump setting values  
Test specifications in parentheses

## Timing-device travel

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value mm: 2.20...2.60  
Shutoff  
electromagnet Volt: 12

## Supply-pump pressure

Speed 1/min: 1100  
Charge press hPa: 1000  
Setting value bar: 5.50...6.10  
Shutoff  
electromagnet Volt: 12

## Full-load del. with charge press.:

Speed 1/min: 1750  
Charge press. hPa: 1000  
Del. quantity cm3/  
1000S.: 55.00...56.00  
Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 4.0  
1000S.: (4.5)

## Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm3/  
1000S.: 16.50...17.50  
Shutoff  
electromagnet Volt: 12

## Low-idle speed regulation

Speed 1/min: 325  
Del. quantity cm3/  
1000S.: 10.00...14.00  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 6.0  
1000S.: (6.5)

## Full-load speed regulation

Speed 1/min: 2100  
Charge press hPa: 1000  
Del. quantity cm3/  
1000S.: 19.50...25.50  
Shutoff  
electromagnet Volt: 12

## Start:

Speed 1/min: 100  
Del. quantity cm3/: 40.00...80.00  
mind 1000S.: 40.00  
Shutoff  
electromagnet Volt: 12

## Load-dependent start of delivery: Inj.-qty.dif.measurement:

Speed 1/min: 1300  
Charge press hPa: 1000

Inj.-qty. cm3/  
 difference 1000S.: 22.00...30.00  
 Shutoff  
 electromagnet Volt: 12  
 TD-travel dif.measurement  
 correttore anticipo iniezione (SV)  
 1.Speed 1/min: 1300  
 Charge press hPa: 1000  
 TD-travel  
 difference mm: 1.90...2.10  
 Shutoff  
 electromagnet Volt: 12  
 SP press.-dif.measurement  
 pompa di mandata (FP)  
 1.Speed 1/min: 1300  
 Charge press hPa: 1000  
 Supply pump  
 pressure  
 difference bar: 0.10...0.30  
 Shutoff  
 electromagnet Volt: 12

Inspection-pump test specifications  
 Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1900  
 Charge press hPa: 1000  
 TD travel mm: 7.10...7.90  
 mm: (6.80...8.20)  
 Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1100  
 Charge press hPa: 1000  
 TD travel mm: 2.20...2.60  
 mm: (1.70...3.10)

Shutoff  
 electromagnet Volt: 12  
 4th speed 1/min: 900  
 Charge press hPa: 1000  
 TD travel mm: 0.60...1.40  
 mm: (0.30...1.70)

Shutoff  
 electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500  
 Charge press. hPa: 1000  
 Supply-pump  
 pressure bar: 3.60...4.20  
 bar: (3.30...4.50)

Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 1100  
 Charge press. hPa: 1000  
 Supply-pump  
 pressure bar: 5.50...6.10  
 bar: (5.20...6.40)

Shutoff  
 electromagnet Volt: 12  
 3rd speed 1/min: 1900  
 Charge press. hPa: 1000  
 Supply-pump  
 pressure bar: 7.60...8.20  
 bar: (7.30...8.50)

Shutoff  
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 41.70...83.40  
 quantity cm3/10s: (26.70...98.40)  
 2nd speed 1/min: 1900  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 55.60...139.00  
 quantity cm3/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800\*  
 Charge-air pressure-setting  
 point hPa: 400  
 LDA-stroke mm: 6.5  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 42.50...43.50  
 1000S.: (39.00...47.00)

2nd speed 1/min: 2350  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 0.00...5.00  
 1000S.: (0.00...5.00)

5th speed 1/min: 2100  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 19.50...25.50  
 1000S.: (18.00...27.00)

8th speed 1/min: 2000  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 40.00...48.00  
 1000S.: (38.00...50.00)

9th speed 1/min: 1900  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 51.00...56.00  
 1000S.: (50.00...57.00)

11th speed 1/min: 1500



Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 52.50...57.50  
                     1000S.: (51.00...59.00)  
 12th speed 1/min: 1750  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 55.00...56.00  
                     1000S.: (52.00...59.00)  
 15th speed 1/min: 1000  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 49.50...54.50  
                     1000S.: (48.00...56.00)  
 18th speed 1/min: 500  
 Charge press. hPa: -  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 16.50...17.50  
                     1000S.: (13.50...20.50)  
 20th speed 1/min: 500  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 48.50...54.50  
                     1000S.: (47.50...55.50)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 325  
 Del. quantity cm3/: 0.00...3.00  
                     1000S.: (0.00...3.00)

Shutoff  
 electromagnet volt: -

Idle delivery:

1st speed 1/min: 325  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 10.00...14.00  
                     1000S.: (8.00...16.00)  
 Dispersion cm3/: 6.0  
                     1000S.: (6.5)  
 2nd speed 1/min: 450  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 0.00...5.00  
                     1000S.: (0.00...5.00)  
 3rd speed 1/min: 250  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 31.00...41.00  
                     1000S.: (30.00...42.00)

Load-dependent start of delivery:  
 Inj.-qty.dif.measurement:

4th speed 1/min: 1300  
 Charge press. hPa: 1000  
 Inj.-qty. cm3/: 22.00...30.00  
 difference 1000S.: (22.00...30.00)  
 Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 1300  
 Charge press. hPa: 1000  
 TD-travel : 1.90...2.10  
 difference mm: (1.90...2.10)  
 Shutoff  
 electromagnet Volt: 12  
 2nd speed 1/min: 1300  
 Charge press. hPa: 1000  
 Supply pump-  
 pressure : 0.10...0.30  
 difference bar: (0.10...0.30)  
 Shutoff  
 electromagnet Volt: 12

Part-load del.at 3rd inj.-qty.  
 terza fermo della portata  
 stop (EGR set)  
 scarico) (ARF)  
 gaz d'échappement-ARF)  
 Spacing mm: 12.0

1st speed 1/min: 1000  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 6.10...7.10  
                     1000S.: (3.10...10.10)

Automatic starting fuel delivery:

1st speed 1/min: 300  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 40.00...70.00  
                     1000S.: (40.00...70.00)

2nd speed 1/min: 400  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 15.00...45.00  
                     1000S.: (15.00...45.00)

4th speed 1/min: 100  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm3/: 40.00...80.00  
                     1000S.: (40.00...80.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K	mm: 3.2...3.4
KF	mm: KOT
MS	mm: 0.6...0.1
SVS max.	mm: 0.8
LDA stroke	mm: 6.5
XK	mm: 20.0...22.0
XL	mm: 9.3...12.7

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

For adjustment of switching point (EGR valve), include 12.0 mm spacer at third fuel-delivery stop.

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 3.6 Q  
Edition : 12.11.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/11F1800L218-6  
Type number : 0 460 416 059  
Customer Part-No. :

Customer-specific information  
Customer : VOLVO-PENTA

Engine : AQAD 41 A

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
Pressure bar: 130.00...133.00

Test inj. tubing : 1 688 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery  
Prestroke mm: 0.3  
(from BDC):  $\pm 0.02(0.04)$

Injection-pump setting values  
Test specifications in parentheses

### Timing-device travel

Speed 1/min: 1200  
Charge press. hPa: 1000  
Setting value mm: 3.90...4.30

### Supply-pump pressure

Speed 1/min: 1200  
Charge press hPa: 1000

Setting value bar: 6.00...6.60

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 68.00...69.00  
Dispersion cm<sup>3</sup>/  
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 650  
Del. quantity cm<sup>3</sup>/  
1000S.: 51.50...52.50

### Low-idle speed regulation

Speed 1/min: 350  
Del. quantity cm<sup>3</sup>/  
1000S.: 15.50...19.50  
Del. quantity cm<sup>3</sup>/  
1000S.: (3.5)

### Full-load speed regulation

Speed 1/min: 2000  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 37.00...43.00

### Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/  
mind 1000S.: 85.00

Inspection-pump test specifications  
Test specifications in parentheses

### Timing-device characteristic:

3rd speed 1/min: 1200  
Charge press hPa: 1000  
TD travel mm: 3.90...4.30  
mm: (3.40...4.80)

4th speed 1/min: 800  
Charge press hPa: 1000  
TD travel mm: 0.90...1.70  
mm: (0.60...2.00)

5th speed 1/min: 1400  
Charge press. hPa: 1000  
TD travel mm: 4.50...5.30  
mm: (4.20...5.60)

### Supply-pump pressure characteristic:

1st speed 1/min: 1800  
Charge press. hPa: 1000

Supply-pump  
pressure bar: 7.40...8.00  
bar: (7.20...8.20)  
2nd speed 1/min: 1200  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 6.00...6.60  
bar: (5.80...6.80)  
3rd speed 1/min: 800  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 5.00...5.60  
bar: (4.80...5.80)

Overflow quantity at overflow valve:

1st speed 1/min: 650  
Charge press. hPa: -  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)  
2nd speed 1/min: 1800  
Charge press. hPa: 1000  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 800\*  
Charge-air pressure-setting  
point hPa: 260  
LDA-stroke mm: 4.7  
Del. quantity cm<sup>3</sup>/: 59.50...60.50  
1000S.: (57.00...63.00)  
2nd speed 1/min: 2130  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)  
3rd speed 1/min: 2050  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 3.00...13.00  
1000S.: (3.00...13.00)  
5th speed 1/min: 2000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 37.00...43.00  
1000S.: (36.00...44.00)  
9th speed 1/min: 1800  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 65.50...68.50  
1000S.: (63.50...70.50)  
12th speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 68.00...69.00  
1000S.: (66.20...70.80)  
18th speed 1/min: 650  
Del. quantity cm<sup>3</sup>/: 51.50...52.50  
1000S.: (49.00...55.00)  
20th speed 1/min: 800  
Charge press. hPa: 1000

Del. quantity cm<sup>3</sup>/: 71.50...74.50  
1000S.: (70.00...76.00)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1900  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Electr. shutoff:

1st speed 1/min: 350  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 12

Idle delivery:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: 15.50...19.50  
1000S.: (12.50...22.50)  
Dispersion cm<sup>3</sup>/: 3.5  
1000S.: (3.5)  
2nd speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)  
3rd speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 3.00...9.00  
1000S.: (1.50...10.50)

Automatic starting fuel delivery:

1st speed 1/min: 300  
Del. quantity cm<sup>3</sup>/: 85.00...115.00  
1000S.: (85.00...115.00)  
2nd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: 55.00...85.00  
1000S.: (55.00...85.00)  
4th speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 85.00...115.00  
1000S.: (85.00...115.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: KOT  
MS mm: 1.1...1.5

LDA stroke      mm: 4.7

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each  
manifold-pressure compensator pressure  
change.

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 5.9 D  
Edition : 08.11.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/11F1150R394  
Type number : 0 460 416 067  
Customer Part-No. :

Customer-specific information  
Customer : IVECO-FIAT

Engine : 8065.25.220

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 020

Opening  
Pressure bar: 172.00...175.00

Perforated-plate  
diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.3  
(from BDC): +0.02(0.04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 700  
Charge press. hPa: 1000  
Setting value mm: 2.20...2.60  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 700  
Charge press hPa: 1000  
Setting value bar: 4.30...4.90  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 83.50...84.50

Shutoff  
electromagnet Volt: 12  
Dispersion cm<sup>3</sup>/: 3.5  
1000S.: (4.0)

Full-load del. w/out charge press.:

Speed 1/min: 500  
Del. quantity cm<sup>3</sup>/  
1000S.: 74.00...75.00

Shutoff  
electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 325  
Del. quantity cm<sup>3</sup>/  
1000S.: 16.00...20.00

Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 3.0  
1000S.: (4.0)

Full-load speed regulation

Speed 1/min: 1260  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 47.00...53.00

Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 85.00...135.00  
mind 1000S.: 85.00  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1000  
 Charge press hPa: 1000  
 TD travel mm: 3.10...3.90  
 mm: (2.80...4.20)

Shutoff  
 electromagnet Volt: 12

3rd speed 1/min: 700  
 Charge press hPa: 1000  
 TD travel mm: 2.20...2.60  
 mm: (1.70...3.10)

Shutoff  
 electromagnet Volt: 12

4th speed 1/min: 550  
 Charge press hPa: 1000  
 TD travel mm: 0.80...1.60  
 mm: (0.50...1.90)

Shutoff  
 electromagnet Volt: 12

#### Supply-pump pressure characteristic:

1st speed 1/min: 550  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 3.60...4.20  
 bar: (3.30...4.50)

Shutoff  
 electromagnet Volt: 12

2nd speed 1/min: 700  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 4.30...4.90  
 bar: (4.00...5.20)

Shutoff  
 electromagnet Volt: 12

3rd speed 1/min: 1150  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 6.10...6.70  
 bar: (5.80...7.00)

Shutoff  
 electromagnet Volt: 12

#### Overflow quantity at overflow valve:

1st speed 1/min: 500  
 Shutoff  
 electromagnet Volt: 12

Overflow : 41.70...83.40  
 quantity cm<sup>3</sup>/10s: (26.70...98.40)

2nd speed 1/min: 1150  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12

Overflow : 55.60...139.00  
 quantity cm<sup>3</sup>/10s: (40.60...153.00)

#### Delivery-quant. and breakaway char.:

1st speed 1/min: 500  
 Charge-air pressure-setting point hPa: 350  
 LDA-stroke mm: 4.7  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 79.00...80.00  
 1000S.: (75.50...83.50)

2nd speed 1/min: 1280  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 30.50...38.50  
 1000S.: (29.50...39.50)

3rd speed 1/min: 1350  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)

5th speed 1/min: 1260  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 47.00...53.00  
 1000S.: (44.00...56.00)

9th speed 1/min: 1150  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 80.00...83.00  
 1000S.: (78.00...85.00)

10th speed 1/min: 650  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 87.00...91.00  
 1000S.: (85.50...92.50)

12th speed 1/min: 1000  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 83.50...84.50  
 1000S.: (80.50...87.50)

18th speed 1/min: 500  
 Charge press. hPa: -  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 74.00...75.00  
 1000S.: (71.00...78.00)

20th speed 1/min: 500  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 84.50...88.50  
 1000S.: (83.00...90.00)

Mech. shutoff:  
 Mech. Abst.ellung:

1st speed 1/min: 1150  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)  
Shutoff  
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 325  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)  
Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 325  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 16.00...20.00  
1000S.: (14.00...22.00)  
Dispersion cm<sup>3</sup>/: 3.0  
1000S.: (4.0)  
2nd speed 1/min: 420  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 150  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 85.00...135.00  
1000S.: (85.00...135.00)

2nd speed 1/min: 250  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 60.00...80.00  
1000S.: (60.00...80.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 85.00...135.00  
1000S.: (85.00...135.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: -

KF mm: KOT  
MS mm: 1.0...1.4  
SVS max. mm: 4.7  
LDA stroke mm: 4.7  
XK mm: 23.0...25.0  
XL mm: 15.8...19.2

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each  
manifold-pressure compensator pressure  
change.



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 7.2 T3  
Edition : 08.11.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/11F1350R417-1  
Type number : 0 460 416 069  
Customer Part-No. :

Customer-specific information  
Customer : MAN

Engine : D 0826 GF01

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 109

Opening  
Pressure bar: 207.00...210.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.55  
(from BDC):  $\pm 0.02(0.04)$

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 800  
Setting value mm: 3.80...4.20  
Shutoff  
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 800  
Setting value bar: 5.00...5.60  
Shutoff  
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 1000  
Del. quantity cm3/  
1000S.: 75.70...76.20

Shutoff  
electromagnet Volt: 24  
Dispersion cm3/: 4.0  
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300  
Del. quantity cm3/  
1000S.: 7.00...13.00

Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 6.0  
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1410  
Del. quantity cm3/  
1000S.: 57.00...63.00

Shutoff  
electromagnet Volt: 24

Start:

Speed 1/min: 100  
Del. quantity cm3/: 35.00...75.00  
mind 1000S.: 35.00  
Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1350  
TD travel mm: 6.10...6.90  
mm: (5.80...7.20)

Shutoff  
electromagnet Volt: 24  
3rd speed 1/min: 800  
TD travel mm: 3.80...4.20  
mm: (3.30...4.70)

Shutoff  
electromagnet Volt: 24  
4th speed 1/min: 600

TD travel mm: 2.50...3.30  
 mm: (2.20...3.60)  
 Shutoff  
 electromagnet Volt: 24  
 6th speed 1/min: 1000  
 TD travel mm: 4.40...5.20  
 mm: (4.10...5.50)  
 Shutoff  
 electromagnet Volt: 24  
 Supply-pump pressure characteristic:  
 1st speed 1/min: 600  
 Supply-pump pressure bar: 4.20...4.80  
 bar: (3.90...5.10)  
 Shutoff  
 electromagnet Volt: 24  
 2nd speed 1/min: 800  
 Supply-pump pressure bar: 5.00...5.60  
 bar: (4.70...5.90)  
 Shutoff  
 electromagnet Volt: 24  
 3rd speed 1/min: 1350  
 Supply-pump pressure bar: 7.00...7.60  
 bar: (6.70...7.90)  
 Shutoff  
 electromagnet Volt: 24  
 4th speed 1/min: 1000  
 Supply-pump pressure bar: 5.80...6.40  
 bar: (5.50...6.70)  
 Shutoff  
 electromagnet Volt: 24  
 Overflow quantity at overflow valve:  
 1st speed 1/min: 600  
 Shutoff  
 electromagnet Volt: 24  
 Overflow : 41.70...83.40  
 quantity cm<sup>3</sup>/10s: (26.70...98.40)  
 2nd speed 1/min: 1350  
 Shutoff  
 electromagnet Volt: 24  
 Overflow : 55.60...139.00  
 quantity cm<sup>3</sup>/10s: (40.60...153.00)  
 Delivery-quant. and breakaway char.:  
 2nd speed 1/min: 1550  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 3rd speed 1/min: 1500

Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 0.00...15.00  
 1000S.: (0.00...15.00)  
 4th speed 1/min: 1450  
 Del. quantity cm<sup>3</sup>/: 15.00...45.00  
 1000S.: (15.00...45.00)  
 5th speed 1/min: 1410  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 57.00...63.00  
 1000S.: (55.50...64.50)  
 9th speed 1/min: 1350  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 75.20...78.20  
 1000S.: (73.70...79.70)  
 11th speed 1/min: 800  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 74.20...78.20  
 1000S.: (72.70...79.70)  
 12th speed 1/min: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 75.70...76.70  
 1000S.: (73.70...78.70)  
 20th speed 1/min: 600  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 58.50...64.50  
 1000S.: (57.50...65.50)  
 Mech. shutoff:  
 Mech. Abststellung:  
 1st speed 1/min: 1350  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet volt: 24  
 Electr. shutoff:  
 1st speed 1/min: 300  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 Shutoff  
 electromagnet volt: -  
 Idle delivery:  
 1st speed 1/min: 300  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 7.00...13.00  
 1000S.: (5.00...15.00)  
 Dispersion cm<sup>3</sup>/: 6.0  
 1000S.: (6.5)  
 2nd speed 1/min: 450

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000s.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 350  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...120.00  
1000s.: (60.00...120.00)

2nd speed 1/min: 500  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 40.00...70.00  
1000s.: (40.00...70.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 35.00...75.00  
1000s.: (35.00...75.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation  
K mm: -  
KF mm: 5.6...6.0  
SVS max. mm: 3.7

Remarks:  
: MAN NR.: 7032  
:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 7.2 T5  
Edition : 12.11.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/11F1350R475-1  
Type number : 0 460 416 072  
Customer Part-No. :

Customer-specific information  
Customer : MAN

Engine : D 0826 OH 02

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 109

Opening  
Pressure bar: 207.00...210.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.55  
(from BDC):  $\pm 0.02(0.04)$

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Setting value mm: 1.80...2.20

Supply-pump pressure

Speed 1/min: 1000  
Setting value bar: 6.50...7.10

Full-load del. w/out charge press.:

Speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 78.00...79.00  
Dispersion cm<sup>3</sup>/: 4.0  
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300  
Del. quantity cm<sup>3</sup>/  
1000S.: 7.00...13.00  
Del. quantity cm<sup>3</sup>/: 6.0  
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1410  
Del. quantity cm<sup>3</sup>/  
1000S.: 57.00...63.00

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 35.00...85.00  
mind 1000S.: 35.00

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1350  
TD travel mm: 3.80...4.60  
mm: (3.80...4.60)  
3rd speed 1/min: 1000  
TD travel mm: 1.80...2.20  
mm: (1.30...2.70)  
4th speed 1/min: 900  
TD travel mm: 0.90...1.70  
mm: (0.60...2.00)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump  
pressure bar: 4.60...5.20  
bar: (4.30...5.50)  
2nd speed 1/min: 1000  
Supply-pump  
pressure bar: 6.50...7.10  
bar: (6.20...7.40)  
3rd speed 1/min: 1350  
Supply-pump  
pressure bar: 8.00...8.60  
bar: (7.70...8.90)

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)  
2nd speed 1/min: 1350  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1550  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)  
3rd speed 1/min: 1500  
Del. quantity cm<sup>3</sup>/: 0.00...15.00  
1000S.: (0.00...15.00)  
4th speed 1/min: 1450  
Del. quantity cm<sup>3</sup>/: 15.00...45.00  
1000S.: (15.00...45.00)  
5th speed 1/min: 1410  
Del. quantity cm<sup>3</sup>/: 57.00...63.00  
1000S.: (53.50...66.50)  
9th speed 1/min: 1350  
Del. quantity cm<sup>3</sup>/: 77.00...80.00  
1000S.: (75.50...81.50)  
12th speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/: 78.00...79.00  
1000S.: (76.00...81.00)  
15th speed 1/min: 800  
Del. quantity cm<sup>3</sup>/: 75.00...79.00  
1000S.: (73.50...80.50)  
20th speed 1/min: 600  
Del. quantity cm<sup>3</sup>/: 55.50...62.50  
1000S.: (54.50...63.50)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1350  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300  
Del. quantity cm<sup>3</sup>/: 7.00...13.00  
1000S.: (5.00...15.00)  
Dispersion cm<sup>3</sup>/: 6.0  
1000S.: (6.5)  
2nd speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 350

Del. quantity cm<sup>3</sup>/: 60.00...120.00  
1000S.: (60.00...120.00)

2nd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: 40.00...70.00  
1000S.: (40.00...70.00)

4th speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 35.00...85.00  
1000S.: (35.00...85.00)

Mounting and assembly dimensions:

Designation

K	mm: -
KF	mm: 5.6...6.0
MS	mm: 0.7
SVS max.	mm: 3.5

Remarks:

:  
:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 7.2 T4  
Edition : 08.11.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/11F1350R417-3  
Type number : 0 460 416 073  
Customer Part-No. :

Customer-specific information  
Customer : MAN

Engine : D 0826 F 02

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 109

Opening  
Pressure bar: 207.00...210.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 840

Start of delivery  
Prestroke mm: 0.55  
(from BDC):  $\pm 0.02(0.04)$

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Setting value mm: 1.80...2.20

Supply-pump pressure

Speed 1/min: 1000  
Setting value bar: 5.00...5.60

Full-load del. with charge press.:

Speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 78.00...79.00  
Dispersion cm<sup>3</sup>/: 4.0  
1000S.: (4.5)

Low-idle speed regulation

Speed 1/min: 300  
Del. quantity cm<sup>3</sup>/  
1000S.: 7.00...13.00  
Del. quantity cm<sup>3</sup>/: 6.0  
1000S.: (6.5)

Full-load speed regulation

Speed 1/min: 1410  
Del. quantity cm<sup>3</sup>/  
1000S.: 57.00...63.00

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 35.00...85.00  
mind 1000S.: 35.00

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 1100  
TD travel mm: 2.50...3.30  
mm: (2.20...3.60)  
3rd speed 1/min: 1000  
TD travel mm: 1.80...2.20  
mm: (1.30...2.70)  
4th speed 1/min: 900  
TD travel mm: 0.70...1.50  
mm: (0.40...1.80)  
5th speed 1/min: 1350  
TD travel mm: 4.50...5.30  
mm: (4.50...5.30)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump  
pressure bar: 3.00...3.60  
bar: (2.70...3.90)  
2nd speed 1/min: 1000  
Supply-pump  
pressure bar: 5.00...5.60  
bar: (4.70...5.90)  
3rd speed 1/min: 1350

Supply-pump  
pressure

bar: 7.00...7.60  
bar: (6.70...7.90)

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.70...98.40)  
2nd speed 1/min: 1350  
Overflow : 55.60...139.00  
quantity cm<sup>3</sup>/10s: (40.60...154.00)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 1550  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)  
3rd speed 1/min: 1500  
Del. quantity cm<sup>3</sup>/: 0.00...15.00  
1000S.: (0.00...15.00)  
4th speed 1/min: 1450  
Del. quantity cm<sup>3</sup>/: 15.00...45.00  
1000S.: (15.00...45.00)  
5th speed 1/min: 1410  
Del. quantity cm<sup>3</sup>/: 57.00...63.00  
1000S.: (53.50...66.50)  
9th speed 1/min: 1350  
Del. quantity cm<sup>3</sup>/: 77.00...80.00  
1000S.: (75.50...81.50)  
11th speed 1/min: 800  
Del. quantity cm<sup>3</sup>/: 75.00...79.00  
1000S.: (73.50...80.50)  
12th speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/: 78.00...79.00  
1000S.: (76.00...82.00)  
20th speed 1/min: 600  
Del. quantity cm<sup>3</sup>/: 58.00...64.00  
1000S.: (57.00...65.00)

Mech. shutoff:

Mech. Abstellung:

1st speed 1/min: 1350  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Idle delivery:

1st speed 1/min: 300  
Del. quantity cm<sup>3</sup>/: 7.00...13.00  
1000S.: (4.50...15.50)  
Dispersion cm<sup>3</sup>/: 6.0  
1000S.: (6.5)  
2nd speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: 60.00...120.00  
1000S.: (60.00...120.00)

2nd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: 40.00...70.00  
1000S.: (40.00...70.00)

4th speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 35.00...85.00  
1000S.: (35.00...85.00)

Mounting and assembly dimensions:

Designation

K mm: -  
KF mm: 5.6...6.0  
SVS max. mm: 3.4

Remarks:

: MAN NR.: 7160  
:

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 5.9 D1  
Edition : 11.11.91  
replaces : -  
Calibrating oil : ISO-4113

Injection pump : VE6/12F1350R404  
Type number : 0 460 426 169  
Customer Part-No. :

Customer-specific information  
Customer : IVECO-FIAT

Engine : 8060.25.4200

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery

Indicator setting  
Piston stroke mm: 1.0  
Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 1000  
Setting value mm: 1.30...1.70

Shutoff  
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000  
Charge press hPa: 1000  
Setting value bar: 5.90...6.50  
Shutoff  
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 61.50...62.50

Shutoff  
electromagnet Volt: 24  
Dispersion cm<sup>3</sup>/: 3.5  
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm<sup>3</sup>/  
1000S.: 49.00...50.00

Shutoff  
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 250  
Del. quantity cm<sup>3</sup>/  
1000S.: 13.00...17.00

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 4.0  
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1475  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 38.00...46.00

Shutoff  
electromagnet Volt: 24

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
mind 1000S.: 60.00  
Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses



# Timing-device characteristic:

2nd speed 1/min: 1000  
 Charge press hPa: 1000  
 TD travel mm: 1.30...1.70  
 mm: (0.60...2.40)

Shutoff  
 electromagnet Volt: 24  
 3rd speed 1/min: 1100  
 Charge press hPa: 1000  
 TD travel mm: 2.20...3.00  
 mm: (1.70...3.50)

Shutoff  
 electromagnet Volt: 24  
 4th speed 1/min: 1350  
 Charge press hPa: 1000  
 TD travel mm: 3.70...4.50  
 mm: (3.20...5.00)

Shutoff  
 electromagnet Volt: 24

# Supply-pump pressure characteristic:

1st speed 1/min: 1000  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 5.90...6.50  
 bar: (5.60...6.80)

Shutoff  
 electromagnet Volt: 24  
 2nd speed 1/min: 600  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 4.00...4.60  
 bar: (3.70...4.90)

Shutoff  
 electromagnet Volt: 24  
 3rd speed 1/min: 1350  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 7.50...8.10  
 bar: (7.20...8.40)

Shutoff  
 electromagnet Volt: 24

# Overflow quantity at overflow valve:

1st speed 1/min: 600  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Overflow : 41.70...83.40  
 quantity cm3/10s: (26.70...98.40)  
 2nd speed 1/min: 1150  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Overflow : 55.60...139.00  
 quantity cm3/10s: (40.60...153.00)

# Delivery-quant. and breakaway char.:

1st speed 1/min: 600\*  
 Charge-air pressure-setting point hPa: 225  
 LDA-stroke mm: 5.7  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 57.50...58.50  
 1000S.: (54.00...62.00)

2nd speed 1/min: 1475  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 38.00...46.00  
 1000S.: (34.00...48.00)

3rd speed 1/min: 1600  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 0.00...3.00  
 1000S.: (0.00...3.00)

5th speed 1/min: 1525  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 22.00...28.00  
 1000S.: (19.00...31.00)

9th speed 1/min: 1350  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 53.50...56.50  
 1000S.: (51.50...58.50)

10th speed 1/min: 1200  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 56.00...60.00  
 1000S.: (54.50...61.50)

12th speed 1/min: 700  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quynntity cm3/: 61.50...62.50  
 1000S.: (58.50...65.50)

18th speed 1/min: 600  
 Charge press. hPa: -  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 49.00...50.00  
 1000S.: (46.00...53.00)

20th speed 1/min: 600  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm3/: 62.00...66.00  
 1000S.: (60.50...67.50)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1350  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 250  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 250  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 13.00...17.00  
1000S.: (10.00...20.00)

Dispersion cm<sup>3</sup>/: 2.0  
1000S.: (5.0)

2nd speed 1/min: 375  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
1000S.: (60.00...110.00)

2nd speed 1/min: 250  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...80.00  
1000S.: (60.00...80.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

A20

Designation

K	mm: 3.7
KF	mm: KOT
MS	mm: 0.7...1.1
LDA stroke	mm: 5.7
XK	mm: 20.0...22.0
XL	mm: 9.8...13.2

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each  
manifold-pressure compensator pressure  
change.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 5.9 D2  
Edition : 11.11.91  
replaces : -  
Calibrating oil : ISO-4113

Injection pump : VE6/12F1350R404-1  
Type number : 0 460 426 170  
Customer Part-No. :

Customer-specific information  
Customer : IVECO-FIAT

Engine : 8060.45.4100

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery

Indicator setting  
Piston stroke mm: 1.0  
Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 1000  
Setting value mm: 1.30...1.70

Shutoff  
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000  
Charge press hPa: 1000  
Setting value bar: 5.90...6.50  
Shutoff  
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 72.50...73.50

Shutoff  
electromagnet Volt: 24  
Dispersion cm<sup>3</sup>/: 3.5  
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm<sup>3</sup>/  
1000S.: 41.50...42.50

Shutoff  
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 250  
Del. quantity cm<sup>3</sup>/  
1000S.: 13.00...17.00

Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 4.0  
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1475  
Charge press hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000S.: 38.00...46.00

Shutoff  
electromagnet Volt: 24

Start:

Speed 1/min: 100  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
mind 1000S.: 60.00

Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses

# Timing-device characteristic:

2nd speed 1/min: 1000  
 Charge press hPa: 1000  
 TD travel mm: 1.30...1.70  
 mm: (0.60...2.40)

Shutoff  
 electromagnet Volt: 24  
 3rd speed 1/min: 1100  
 Charge press hPa: 1000  
 TD travel mm: 2.20...3.00  
 mm: (1.70...3.50)

Shutoff  
 electromagnet Volt: 24  
 4th speed 1/min: 1350  
 Charge press hPa: 1000  
 TD travel mm: 3.70...4.50  
 mm: (3.20...5.00)

Shutoff  
 electromagnet Volt: 24

# Supply-pump pressure characteristic:

1st speed 1/min: 1000  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 5.90...6.50  
 bar: (5.60...6.80)

Shutoff  
 electromagnet Volt: 24  
 2nd speed 1/min: 600  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 4.00...4.60  
 bar: (3.70...4.90)

Shutoff  
 electromagnet Volt: 24  
 3rd speed 1/min: 1350  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 7.40...8.00  
 bar: (7.10...8.30)

Shutoff  
 electromagnet Volt: 24

# Overflow quantity at overflow valve:

1st speed 1/min: 600  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Overflow : 41.70...83.40  
 quantity cm<sup>3</sup>/10s: (26.70...98.40)  
 2nd speed 1/min: 1150  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Overflow : 55.60...139.00  
 quantity cm<sup>3</sup>/10s: (40.60...153.00)

# Delivery-quant. and breakaway char.:

1nd speed 1/min: 600\*  
 Charge-air pressure-setting point hPa: 400  
 LDA-stroke mm: 7.2  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 61.00...62.00  
 1000S.: (57.50...65.50)

2nd speed 1/min: 1475  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 38.00...46.00  
 1000S.: (34.00...48.00)

3rd speed 1/min: 1600  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)

5th speed 1/min: 1525  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 22.00...28.00  
 1000S.: (19.00...31.00)

9th speed 1/min: 1350  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 61.50...64.50  
 1000S.: (59.50...66.50)

10th speed 1/min: 1200  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 53.50...57.50  
 1000S.: (62.00...69.00)

12th speed 1/min: 700  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quynity cm<sup>3</sup>/: 72.50...73.50  
 1000S.: (69.50...76.50)

18th speed 1/min: 600  
 Charge press. hPa: -  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 41.50...42.50  
 1000S.: (38.50...45.50)

20th speed 1/min: 600  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 75.00...79.00  
 1000S.: (73.50...80.50)

Mech. shutoff:  
Mech. Abst llung:

1st speed 1/min: 1350  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 250  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 250  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 13.00...17.00  
1000S.: (10.00...20.00)

Dispersion cm<sup>3</sup>/: 2.0  
1000S.: (5.0)

2nd speed 1/min: 375  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
1000S.: (60.00...110.00)

2nd speed 1/min: 250  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...80.00  
1000S.: (60.00...80.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 60.00...110.00  
1000S.: (60.00...110.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

A23

Designation

K mm: 3.7  
KF mm: KOT  
MS mm: 0.7...1.1  
LDA stroke mm: 7.2

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each  
manifold-pressure compensator pressure  
change.

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 5.9 D3  
Edition : 11.11.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE6/12F1350R404-2  
Type number : 0 460 426 171  
Customer Part-No. :

Customer-specific information  
Customer : IVECO-FIAT

Engine : 8060.25.4000

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
Pressure bar: 250.00...253.00

Perforated-plate  
diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery

Indicator setting  
Piston stroke mm: 1.0  
Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1000  
Charge press. hPa: 1000  
Setting value mm: 0.90...1.30

Shutoff  
electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 1000  
Charge press hPa: 1000  
Setting value bar: 6.10...6.70  
Shutoff  
electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm3/  
1000S.: 78.00...79.00

Shutoff  
electromagnet Volt: 24  
Dispersion cm3/: 3.5  
1000S.: (5.0)

Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm3/  
1000S.: 50.00...51.00

Shutoff  
electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 250  
Del. quantity cm3/  
1000S.: 13.00...17.00

Shutoff  
electromagnet Volt: 24  
Del. quantity cm3/: 4.0  
1000S.: (5.0)

Full-load speed regulation

Speed 1/min: 1475  
Charge press hPa: 1000  
Del. quantity cm3/  
1000S.: 49.00...57.00

Shutoff  
electromagnet Volt: 24

Start:

Speed 1/min: 100  
Del. quantity cm3/: 70.00...120.00  
mind 1000S.: 70.00  
Shutoff  
electromagnet Volt: 24

Inspection-pump test specifications  
Test specifications in parentheses

## Timing-device characteristic:

2nd speed 1/min: 1000  
 Charge press hPa: 1000  
 TD travel mm: 0.90...1.30  
 mm: (0.20...2.00)

Shutoff  
 electromagnet Volt: 24  
 3rd speed 1/min: 1100  
 Charge press hPa: 1000  
 TD travel mm: 1.90...2.70  
 mm: (1.40...3.20)

Shutoff  
 electromagnet Volt: 24  
 4th speed 1/min: 1350  
 Charge press hPa: 1000  
 TD travel mm: 3.70...4.50  
 mm: (3.20...5.00)

Shutoff  
 electromagnet Volt: 24

## Supply-pump pressure characteristic:

1st speed 1/min: 1000  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 6.10...6.70  
 bar: (5.80...7.00)

Shutoff  
 electromagnet Volt: 24  
 2nd speed 1/min: 600  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 4.20...4.80  
 bar: (3.90...5.10)

Shutoff  
 electromagnet Volt: 24  
 3rd speed 1/min: 1350  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 7.70...8.30  
 bar: (7.40...8.60)

Shutoff  
 electromagnet Volt: 24

## Overflow quantity at overflow valve:

1st speed 1/min: 600  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Overflow quantity cm<sup>3</sup>/10s: 41.70...83.40  
 (26.70...98.40)  
 2nd speed 1/min: 1150  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Overflow quantity cm<sup>3</sup>/10s: 55.60...139.00  
 (40.60...153.00)

## Delivery-quant. and breakaway char.:

1nd speed 1/min: 600\*  
 Charge-air pressure-setting point hPa: 400  
 LDA-stroke mm: 7.0  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 66.50...67.50  
 1000S.: (57.50...65.50)

2nd speed 1/min: 1475  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 49.00...57.00  
 1000S.: (47.00...59.00)

3rd speed 1/min: 1625  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)

5th speed 1/min: 1525  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 31.00...37.00  
 1000S.: (28.00...40.00)

9th speed 1/min: 1350  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 68.00...71.00  
 1000S.: (66.00...73.00)

10th speed 1/min: 1200  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 71.50...77.50  
 1000S.: (70.00...77.00)

12th speed 1/min: 700  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quynity cm<sup>3</sup>/: 78.00...79.00  
 1000S.: (75.00...82.00)

18th speed 1/min: 600  
 Charge press. hPa: -  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 50.00...51.00  
 1000S.: (47.00...54.00)

20th speed 1/min: 600  
 Charge press. hPa: 1000  
 Shutoff  
 electromagnet Volt: 24  
 Del. quantity cm<sup>3</sup>/: 80.00...84.00  
 1000S.: (78.50...85.50)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 1350  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: 24

Electr. shutoff:

1st speed 1/min: 250  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

1st speed 1/min: 250  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 13.00...17.00  
1000S.: (10.00...20.00)

Dispersion cm<sup>3</sup>/: 2.0  
1000S.: (5.0)

2nd speed 1/min: 375  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Automatic starting fuel delivery:

1st speed 1/min: 130  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 70.00...120.00  
1000S.: (70.00...120.00)

2nd speed 1/min: 250  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 40.00...60.00  
1000S.: (40.00...60.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 24  
Del. quantity cm<sup>3</sup>/: 70.00...120.00  
1000S.: (70.00...120.00)

Shutoff electromagnet:

Cut-in  
min voltage : 20.0  
Rated voltage : 24.0

Mounting and assembly dimensions:

Designation

K	mm: 3.7
KF	mm: KOT
MS	mm: 0.7...1.1
LDA stroke	mm: 7.0
XK	mm: 20.0...22.0
XL	mm: 11.9...15.3

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each  
manifold-pressure compensator pressure  
change.



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 1.3 C  
Edition : 12.11.91  
replaces : -  
Calibrating oil : ISO-4113  
Injection pump : VE4/8F2400R465  
Type number : 0 460 484 053  
Customer Part-No. :

Customer-specific information  
Customer : FIAT-AUTO

Engine : M709 BT 13.L

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1500  
Charge press. hPa: 1000  
Setting value mm: 4.60...5.00  
AFB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 2000  
Charge press hPa: 1000

A27

Setting value bar: 6.80...7.40

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm3/  
1000S.: 40.10...41.10

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 3.0  
1000S.: (3.5)

Full-load del. w/out charge press.:

Speed 1/min: 750  
Del. quantity cm3/  
1000S.: 23.40...24.40

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

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Low-idle speed regulation

Speed 1/min: 400  
Del. quantity cm3/  
1000S.: 6.00...10.00

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 3.0  
1000S.: (3.5)

Full-load speed regulation

Speed 1/min: 2550  
Charge press hPa: 1000  
Del. quantity cm3/  
1000S.: 28.00...34.00

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: 33.00...63.00  
mind 1000S.: 33.00

KSB/AFB  
Valve Volt: 12

Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1500  
Charge press hPa: 1000  
Inj.-qty. cm<sup>3</sup>/  
difference 1000S.: 23.00...29.00  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1500  
Charge press hPa: 1000  
TD-travel  
difference mm: 0.70...0.90  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
SP press.-dif.measurement  
pompa di mandata (FP)  
1.Speed 1/min: 1500  
Charge press hPa: 1000  
Supply pump  
pressure  
difference bar: 0.10...0.30  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2400  
Charge press hPa: 1000  
TD travel mm: 8.60...9.40  
mm: (8.30...9.70)  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1500  
Charge press hPa: 1000  
TD travel mm: 4.60...5.00  
mm: (3.80...5.20)  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 750  
Charge press hPa: 1000

TD travel mm: 1.00...1.80  
mm: (0.50...2.30)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
6th speed 1/min: 2000  
Charge press. hPa: 1000  
TD travel mm: 6.70...7.30  
mm: (6.30...7.70)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
9th speed 1/min: 300  
Charge press. hPa: 1000  
TD travel mm: 2.30...4.70  
mm: (2.30...4.70)

KSB/AFB  
valve Volt: -  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 2400  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 7.80...8.40  
bar: (7.60...8.60)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 2000  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 6.80...7.40  
bar: (6.60...7.60)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 5.70...6.30  
bar: (5.50...6.50)

KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
4th speed 1/min: 750  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 3.90...4.50  
bar: (3.70...4.70)

KSB/AFB  
valve Volt: 12

Shutoff  
 electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 750  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 41.70...83.40  
 quantity cm<sup>3</sup>/10s: (26.70...98.40)  
 2nd speed 1/min: 2400  
 Charge press. hPa: 1000  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Overflow : 55.60...139.00  
 quantity cm<sup>3</sup>/10s: (40.60...153.00)

Delivery-quant. and breakaway char.:

1nd speed 1/min: 950\*  
 Charge-air pressure-setting  
 point hPa: 400  
 LDA-stroke mm: 6.6  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 29.60...30.60  
 1000S.: (27.10...33.10)  
 2nd speed 1/min: 2950  
 Charge press. hPa: 1000  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)  
 3rd speed 1/min: 2750  
 Charge press. hPa: 1000  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 5.00...13.00  
 1000S.: (4.00...14.00)  
 5th speed 1/min: 2550  
 Charge press. hPa: 1000  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 28.00...34.00  
 1000S.: (25.00...37.00)  
 9th speed 1/min: 2400  
 Charge press. hPa: 1000

KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 37.50...40.50  
 1000S.: (36.50...41.50)  
 12th speed 1/min: 1500  
 Charge press. hPa: 1000  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 40.10...41.10  
 1000S.: (38.10...42.90)  
 16th speed 1/min: 1100  
 Charge press. hPa: -  
 KSB solenoid-operated  
 valve volt: 12  
 Shutoff  
 electromagnet volt: 12  
 Del. quantity cm<sup>3</sup>/: 23.30...26.30  
 1000H.: (21.80...27.80)  
 18th speed 1/min: 750  
 Charge press. hPa: -  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 23.40...24.40  
 1000S.: (20.90...26.90)

Mech. shutoff:

Electr. shutoff:

1st speed 1/min: 400  
 Del. quantity cm<sup>3</sup>/: 0.00...3.00  
 1000S.: (0.00...3.00)

Shutoff  
 electromagnet volt: -  
 KSB/AFB  
 valve Volt: 12

Idle delivery:

1st speed 1/min: 400  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12  
 Del. quantity cm<sup>3</sup>/: 6.00...10.00  
 1000S.: (3.00...13.00)  
 Dispersion cm<sup>3</sup>/: 3.0  
 1000S.: (3.5)  
 2nd speed 1/min: 520  
 KSB/AFB  
 valve Volt: 12  
 Shutoff  
 electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000S.: (0.00...3.00)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

4th speed 1/min: 1500  
Charge press. hPa: 1000  
Inj.-qty. cm<sup>3</sup>/: 23.00...29.00  
difference 1000S.: (22.00...30.00)

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1500

Charge press. hPa: 1000  
TD-travel : 0.70...0.90  
difference mm: (0.70...0.90)

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12  
2nd speed 1/min: 1500

Charge press. hPa: 1000  
Supply pump-  
pressure : 0.10...0.30  
difference bar: (0.10...0.30)

KSB/AFB  
valve Volt: 12

Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 350  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 23.00...53.00  
1000S.: (23.00...53.00)

2nd speed 1/min: 450  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 20.00...40.00  
1000S.: (20.00...40.00)

4th speed 1/min: 100  
KSB/AFB  
valve Volt: 12  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm<sup>3</sup>/: 33.00...63.00  
1000S.: (33.00...63.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: 3.2...3.4

KF mm: 5.2...5.6

MS mm: 1.5

SVS max. mm: -

LDA stroke mm: 6.6

\* Correction at adjusting nut (46)  
emarks:

:  
Operate control lever after each  
manifold-pressure compensator pressure  
change.

\* Unscrew KSB ball valve 2 mm

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PEU 1.9 K6  
Edition : 11.11.91  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE4/9F2300R426  
Type number : 0 460 494 279  
Customer Part-No. :

Customer-specific information  
Customer : PSA

Engine : XUD 9/Y-N2

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40.00...48.00  
Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
Pressure bar: 130.00...133.00

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00  
x Wall thickness : 2.00  
x Length mm: 450

Start of delivery

Indicator setting  
Piston stroke mm: 0.3  
Outlet : B

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel

Speed 1/min: 1250  
Setting value mm: 4.00...4.40  
Shutoff  
electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250  
Setting value bar: 4.90...5.50  
Shutoff  
electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 1250  
Del. quantity cm3/  
1000S.: 28.00...29.00  
Shutoff  
electromagnet Volt: 12  
Dispersion cm3/: 2.0  
1000S.: (3.0)

Residual-Delivery Setting

Speed 1/min: 550  
Del. quantity cm3/  
1000S.: 2.50...3.50  
Shutoff  
electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2440  
Del. quantity cm3/  
1000S.: 21.00...25.00  
Shutoff  
electromagnet Volt: 12

Start:

Speed 1/min: 100  
Del. quantity cm3/: 44.00...74.00  
mind 1000S.: 44.00  
Shutoff  
electromagnet Volt: 12

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

Speed 1/min: 1250  
Charge press hPa: 12  
Inj.-qty. cm3/  
difference 1000S.: 6.00...10.00  
Shutoff  
electromagnet Volt: 12  
TD-travel dif.measurement  
correttore anticipo iniezione (SV)  
1.Speed 1/min: 1250  
TD-travel  
difference mm: 0.70...0.90  
Shutoff  
electromagnet Volt: 12  
SP press.-dif.measurement  
pompa di mandata (FP)  
1.Speed 1/min: 1250

Supply pump  
pressure difference bar: 0.60...10.00  
Shutoff  
electromagnet Volt: 12

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

2nd speed 1/min: 2000  
TD travel mm: 7.60...8.40  
mm: (7.30...8.70)

Shutoff  
electromagnet Volt: 12

3rd speed 1/min: 1250  
TD travel mm: 4.00...4.40  
mm: (3.50...4.90)

Shutoff  
electromagnet Volt: 12

4th speed 1/min: 800  
TD travel mm: 1.50...2.30  
mm: (1.20...2.60)

Shutoff  
electromagnet Volt: 12

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump pressure bar: 2.80...3.40  
bar: (2.60...3.60)

Shutoff  
electromagnet Volt: 12

2nd speed 1/min: 1250  
Supply-pump pressure bar: 4.90...5.50  
bar: (4.70...5.70)

Shutoff  
electromagnet Volt: 12

3rd speed 1/min: 2250  
Supply-pump pressure bar: 7.60...8.20  
bar: (7.40...8.40)

Shutoff  
electromagnet Volt: 12

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Shutoff  
electromagnet Volt: 12

Overflow : 41.70...83.40  
quantity cm<sup>3</sup>/10s: (26.80...98.30)

2nd speed 1/min: 2250  
Shutoff  
electromagnet Volt: 12

Overflow : 55.60...138.90  
quantity cm<sup>3</sup>/10s: (40.70...152.90)

Delivery-quant. and breakaway char.:

2nd speed 1/min: 2750  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 0.00...6.00  
1000s.: (0.00...6.00)

3rd speed 1/min: 2540  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 10.00...16.00  
1000s.: (8.00...18.00)

5th speed 1/min: 2440  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 21.00...25.00  
1000s.: (19.00...27.00)

9th speed 1/min: 2250  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 29.20...31.20  
1000s.: (28.00...32.40)

12th speed 1/min: 1250  
Shutoff  
electromagnet Volt: 12

Del. quynntity cm<sup>3</sup>/: 28.00...29.00  
1000s.: (26.30...30.70)

20th speed 1/min: 500  
Shutoff  
electromagnet Volt: 12

Del. quantity cm<sup>3</sup>/: 28.50...31.50  
1000s.: (27.00...33.00)

Mech. shutoff:  
Mech. Abstellung:

1st speed 1/min: 2250  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000s.: (0.00...3.00)

Shutoff  
electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375  
Del. quantity cm<sup>3</sup>/: 0.00...3.00  
1000s.: (0.00...3.00)

Shutoff  
electromagnet volt: -

Idle delivery:

Damper set qty.:

1st speed 1/min: 1125  
Shutoff  
electromagnet Volt: 12

Del. quantity cm3/: 17.00...19.00  
1000S.: (14.00...22.00)

LFG-setting:  
solidale con carcassa:  
Idle delivery:

1st speed 1/min: 375  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 7.00...9.00  
1000S.: (4.00...12.00)

High Idle:

1st speed 1/mi: 470  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 7.00...9.00  
1000S.: (4.00...12.00)

Residual:

1.Rotacao 1/min: 550  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 2.50...3.50  
1000S.: (1.00...5.00)

Load-dependent start of delivery:  
Inj.-qty.dif.measurement:

3rd speed 1/min: 1250  
Inj.-qty. cm3/: 6.00...10.00  
difference 1000S.: (3.00...13.00)  
Shutoff  
electromagnet Volt: 12

TD-travel dif.measurement:  
correttore anticipo iniezione (SV):

1st speed 1/min: 1250  
TD-travel : 0.70...0.90  
difference mm: (0.70...0.90)

Shutoff  
electromagnet Volt: 12  
3rd speed 1/min: 1250  
Supply pump-  
pressure : 0.60...1.00  
difference bar: (0.40...1.20)  
Shutoff  
electromagnet Volt: 12

Automatic starting fuel delivery:

1st speed 1/min: 225  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 46.00...80.00  
1000S.: (46.00...80.00)

2nd speed 1/min: 350  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 15.00...35.00  
1000S.: (15.00...35.00)

4th speed 1/min: 100  
Shutoff  
electromagnet Volt: 12  
Del. quantity cm3/: 44.00...74.00  
1000S.: (44.00...74.00)

Shutoff electromagnet:

Cut-in  
min voltage : 10.0  
Rated voltage : 12.0

Mounting and assembly dimensions:

Designation  
K mm: 3.2...3.4  
KF mm: 5.6...6.0  
MS mm: 0.8...1.2

Remarks:

:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 3,0 W  
Edition : 26.11.91  
Replaces : 06.04.88  
Test oil : ISO-4113  
  
Combination no. : 0 400 076 994  
  
Injection pump  
Pump designation : PES6M55C320RS156  
EP type number : 0 410 056 995  
Governor  
Governor design. : RSF315/2300M59-3  
Governor no. : 0 420 021 040

Customer-spec. information  
Customer : DB

Engine : OM603-3.0

1st version kW : 80.0

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10  
: (1.95...2.15)  
Rack travel in mm : 20.00...22.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 11.30...11.40

Del.quantity cm<sup>3</sup>/ : 3.1...3.2

100 s: (3.0...3.3)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

2nd speed rpm : 290.0

Rack travel in mm : 5.4...5.6

Del.quantity cm<sup>3</sup>/ : 0.5...0.6

100 s: (0.5...0.9)

Spread cm<sup>3</sup> : 0.1

100 s: (0.1)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del.quantity : 31.5...32.5

1000 : (30.5...33.5)

Spread cm<sup>3</sup> : 2.50

1000 : (3.00)

## RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,80...8,20

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

## SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000

Rack travel in mm : 0,9...1,0

## LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Speed rpm : 290





greater than 0.2 mm after switchover  
point (of starting cam).



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : STE 6,0 i  
Edition : 29.11.91  
Replaces : 16.11.90  
Test oil : ISO-4113

Combination no. : 0 400 656 152

Injection pump  
Pump designation : PE6A90D412RS2507  
EP type number : 0 410 696 178  
Governor  
Governor design. : RQV300...1400AB970DL  
Governor no. : 0 420 214 222

Customer-spec. information  
Customer : SNF

Engine : WD61039

1st version kW : 97.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25  
: (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 8.50...8.60

Del.quantity cm3/ : 5.5...5.6

100 s: (5.3...5.8)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 300.0

Rack travel in mm : 7.5...7.7

Del.quantity cm3/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1565

Rack travel in mm : 6.20...8.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 55.5...56.5

1000 : (53.5...58.5)

Spread cm3 : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever

position degrees: 102...110

## Testing:

1st rack travel in: 7.50

Speed rpm : 1440...1450

2nd rack travel in: 4.00

Speed rpm : 1480...1510

4th rack travel in: 1600

Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever

position degrees: 73...81

#### Testing:

Speed rpm : 200

Minimum rack travel: 8.00

Speed rpm : 300

Rack travel in mm : 5.90...6.10

#### CONSTANT REGULATION

Speed rpm : 350...450

#### TORQUE CONTROL

Dimension a mm : 1.10

Torque control curve - 1st version

1st speed rpm : 1400

Rack travel in m: 8.50...8.60

2nd speed rpm : 500

Rack travel in m: 9.60...9.70

3rd speed rpm : 905

Rack travel in m: 9.20...9.40

4th speed rpm : 1060

Rack travel in m: 8.70...8.90

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 900

Del.quantity cm<sup>3</sup>/ : 52.5...54.5

1000 s: (50.0...57.0)

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 44.5...46.5

1000 s: (42.0...49.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 7.50

Speed rpm : 1440...1450

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 110.0...120.0

1000 s: (107.0...123.0)

Rack travel in mm : 15.30...15.70

Remarks:

:

#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 b 9  
Edition : 29.11.91  
Replaces : 2.5.90  
Test oil : ISO-4113

Combination no. : 0 400 836 041

Injection pump  
Pump designation : PES6A100D320/3RS2691  
-2

EP type number : 9 410 230 028

Governor

Governor design. : RQV350...1100AB1227-  
1R

Governer no. : 0 420 213 113

Customer spec. information

Customer : CDC

Engine : 6 CT 8.3

1st version kW : 157.0

Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 12.6...12.8

100 s: (12.4...13.1)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.6

100 s: (0.8)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.80...2.30

2nd speed rpm : 460

travel mm : 1.60...2.10

3rd speed rpm : 510

travel mm : 2.00...2.50

4th speed rpm : 630

travel mm : 2.70...3.20

5th speed rpm : 1150

travel mm : 7.30...7.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 11.30...13.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100  
Aneroid pressure h: 900  
Del.quantity : 126.5...128.5  
1000 : (124.0...131.0)  
Spread cm<sup>3</sup> : 4.00  
1000 : (6.50)

#### RATED SPEED

1st version  
Control Lever  
position degrees: 99...117

#### Testing:

1st rack travel in: 11.60  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1255...1285  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control Lever  
position degrees: 62...70  
Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Rack travel in mm : 2.00  
Speed rpm : 570...630

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 500  
Rack travel in m: 12.60...12.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.60...12.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.10...10.30  
2nd pressure hPa : 405  
Rack travel in m: 10.90...11.00  
3rd pressure hPa : 535  
Rack travel in m: 11.80...12.20

#### START CUT-OUT

Speed 1/min : 260 (280)

B12

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 79.0...83.0  
1000 s: (76.5...85.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 165.0...185.0  
1000 s: (162.0...188.0)  
Rack travel in mm : 15.30...15.70

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at 7° after start of delivery.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 b 8  
Edition : 22.11.91  
Replaces : 28.9.89  
Test oil : ISO-4113

Combination no. : 0 400 836 042

Injection pump  
Pump designation : PES6A100D320/3RS2691  
-2

EP type number : 9 410 230 028

Governor

Governor design. : RQV400...1250AB1235-  
1R

Governer no. : 0 420 213 114

Customer-spec. information

Customer : C.D.C.

Engine : 6 CT

1st version kW : 150.0

Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 10.9...11.1

100 s: (10.7...11.3)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.0...5.2

Del.quantity cm3/ : 1.5...1.9

100 s: (1.3...2.2)

Spread cm3 : 0.6

100 s: (0.8)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 8.80...9.20

2nd speed rpm : 1300

travel mm : 7.60...7.80

3rd speed rpm : 400

travel mm : 1.50...1.90

4th speed rpm : 600

travel mm : 3.50...3.90

5th speed rpm : 300

travel mm : 0.50...0.90

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 700

Del.quantity : 109.0...111.0

1000 : (107.0...113.0)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 10.30  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...16

Testing:  
Speed rpm : 250  
Minimum rack travel: 7.60  
Speed rpm : 400  
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION  
Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.20...11.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.30...10.50  
2nd pressure hPa : 280  
Rack travel in m: 10.50...10.70  
3rd pressure hPa : 320  
Rack travel in m: 10.80...11.20

## START CUT-OUT

Speed 1/min : 320 (330)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 85.0...89.0  
1000 s: (83.0...91.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1290...1300

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.00...5.20  
Del.quantity cm3/ : 15.5...19.5  
1000 s: (13.0...22.0)  
Spread cm3 : 6.00  
1000 s: (8.00)

Remarks:  
: C.D.C. # 3914626

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 4,0 j 1  
Edition : 29.11.91  
Replaces : 21.8.91  
Test oil : ISO-4113

Combination no. : 0 400 844 096

Injection pump  
Pump designation : PES4A95D410RS2809  
EP type number : 0 410 894 993  
Governor  
Governor design. : RQV300...1400AB1065-  
23L  
Governor no. : 0 420 212 227

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 65.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
: (3.15...3.35)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.90...10.00

Del. quantity cm3/ : 6.5...6.6

100 s: (6.3...6.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0  
Rack travel in mm : 8.5...8.7  
Del. quantity cm3/ : 0.8...1.2  
100 s: (0.5...1.4)

Spread cm3 : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 0.80...1.30  
2nd speed rpm : 500  
travel mm : 2.30 ...2.80  
3rd speed rpm : 750  
travel mm : 4.10...4.30  
4th speed rpm : 1500  
travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1450  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1400  
Del. quantity : 65.0...66.0  
1000 : (63.0...68.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 111...119

Testing:  
1st rack travel in: 8.90  
Speed rpm : 1450...1460  
2nd rack travel in: 4.00  
Speed rpm : 1535...1565  
4th rack travel in: 1670  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 73...81

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.60  
Speed rpm : 300  
Rack travel in mm : 8.50...8.70

CONSTANT REGULATION  
Speed rpm : 550...700

TORQUE CONTROL  
Dimension a mm : 1.20  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 9.90...10.00  
2nd speed rpm : 400  
Rack travel in m: 11.10...11.20  
3rd speed rpm : 670  
Rack travel in m: 10.60...10.80  
4th speed rpm : 1060  
Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 48.0...51.0  
1000 s: (45.5...53.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.90  
Speed rpm : 1450...1460

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 14.40...14.80

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 4,0 j 2  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 844 097  
 Injection pump  
 Pump designation : PES4A95D410RS2809  
 EP type number : 0 410 894 993  
 Governor  
 Governor design. : RQV300...1400AB1065-  
 27L  
 Governor no. : 0 420 212 238

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 65.0  
 Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.90...10.00

Del.quantity cm3/ : 6.5...6.6

100 s: (6.3...6.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.5...8.7

Del.quantity cm3/ : 0.8...1.2

100 s: (0.5...1.4)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

2nd speed rpm : 500

travel mm : 2.30 ...2.80

3rd speed rpm : 750

travel mm : 4.10...4.30

4th speed rpm : 1500

travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1450

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Del.quantity : 65.0...66.0

1000 : (63.0...68.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 111...119

Testing:  
1st rack travel in: 8.90  
Speed rpm : 1450...1460  
2nd rack travel in: 4.00  
Speed rpm : 1535...1565  
4th rack travel in: 1670  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 73...81

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.60  
Speed rpm : 300  
Rack travel in mm : 8.50...8.70

CONSTANT REGULATION  
Speed rpm : 550...700

TORQUE CONTROL  
Dimension a mm : 1.20  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 9.90...10.00  
2nd speed rpm : 400  
Rack travel in m: 11.10...11.20  
3rd speed rpm : 670  
Rack travel in m: 10.60...10.80  
4th speed rpm : 1060  
Rack travel in m: 10.10...10.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 48.0...51.0  
1000 s: (45.5...53.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack travel: 8.90  
Speed rpm : 1450...1460

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 14.40...14.80

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 5,9 e 1  
 Edition : 23.10.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 595  
 Injection pump  
 Pump designation : PES6A90D410RS2813  
 EP type number : 0 410 896 089  
 Governor  
 Governor design. : RQV300...1250AB1262-  
 L  
 Governor no. : 0 420 212 232

Customer-spec. information  
 Customer : IVECO-FIAT

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.75...2.85  
 : (2.70...2.90)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250  
 Rack travel in mm : 10.80...10.90  
 Del.quantity cm3/ : 6.7...6.8  
 100 s: (6.5...7.0)  
 Spread cm3 : 0.3  
 100 s: (0.4)  
 2nd speed rpm : 325.0  
 Rack travel in mm : 8.4...8.6  
 Del.quantity cm3/ : 0.8...1.4  
 100 s: (0.6...1.6)  
 Spread cm3 : 0.2  
 100 s: (0.4)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
 travel mm : 1.40...1.90  
 2nd speed rpm : 430  
 travel mm : 2.80...3.30  
 3rd speed rpm : 530  
 travel mm : 3.40...3.90  
 4th speed rpm : 880  
 travel mm : 5.50...6.00  
 5th speed rpm : 1300  
 travel mm : 8.30...8.80

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1280  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Del.quantity : 67.0...68.0  
 1000 : (65.0...70.0)  
 Spread cm3 : 3.00  
 1000 : (4.50)

## RATED SPEED

1st version

Control lever  
position degrees: 111...119

Testing:  
1st rack travel in: 9.80  
Speed rpm : 1330...1340  
2nd rack travel in: 4.00  
Speed rpm : 1415...1445  
4th rack travel in: 1510  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 69...77

Testing:  
Speed rpm : 225  
Minimum rack travel: 10.40  
Speed rpm : 325  
Rack travel in mm : 8.40...8.60

TORQUE CONTROL  
Dimension a mm : 0.90  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 250  
Rack travel in m: 11.70...11.80  
3rd speed rpm : 410  
Rack travel in m: 11.40...11.60  
4th speed rpm : 620  
Rack travel in m: 10.90...11.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 63.5...65.5  
1000 s: (61.0...68.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1330...1340

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 95.0...105.0  
1000 s: (92.0...108.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 5,9 e  
Edition : 29.11.91  
Replaces : 8.10.91  
Test oil : ISO-4113

Combination no. : 0 400 846 597

Injection pump  
Pump designation : PES6A90D410RS2813  
EP type number : 0 410 896 089  
Governor  
Governor design. : RQV300...1250AB1264L  
Governor no. : 0 420 212 233

Customer-spec. information  
Customer : IVECO-FIAT

Engine : 8065.25.000

1st version kW : 145.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85  
: (2.70...2.90)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 7.6...7.7

100 s : (7.4...7.9)

Spread cm3 : 0.3

100 s : (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 8.2...8.4

Del.quantity cm3/ : 0.6...1.0

100 s : (0.4...1.2)

Spread cm3 : 0.2

100 s : (0.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 0.60...1.10

2nd speed rpm : 445  
travel mm : 2.20...2.70

3rd speed rpm : 540  
travel mm : 2.80...3.30

4th speed rpm : 897  
travel mm : 5.00...5.50

5th speed rpm : 1324  
travel mm : 8.00...8.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1495

Rack travel in mm : 9.60...12.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 700

Del.quantity : 76.0...77.0

1000 : (74.0...79.0)

Spread cm<sup>3</sup> : 3.00  
1000 : (5.00)

#### RATED SPEED

1st version

Control lever

position degrees: 111...119

Testing:

1st rack travel in: 10.90

Speed rpm : 1310...1320

2nd rack travel in: 4.00

Speed rpm : 1415...1445

4th rack travel in: 1510

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 68...76

Testing:

Speed rpm : 300

Minimum rack travel: 19.50

Speed rpm : 300

Rack travel in mm : 8.20...8.40

Rack travel in mm : 2.00

Speed rpm : 690...750

#### TORQUE CONTROL

Dimension a mm : 2.20

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 10.90...11.00

2nd speed rpm : 500

Rack travel in m: 13.10...13.20

3rd speed rpm : 700

Rack travel in m: 12.70...12.90

4th speed rpm : 915

Rack travel in m: 12.10...12.40

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 13.10...13.20

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 11.40...11.50

2nd pressure hPa : 315

Rack travel in m: 12.70...12.80

3rd pressure hPa : 280

Rack travel in m: 12.10...12.30

#### START CUT-OUT

Speed 1/min : 220 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 75.5...77.5  
1000 s: (73.0...80.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 50.0...51.0  
1000 s: (48.0...53.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 1310...1320

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 100.0...110.0  
1000 s: (97.0...113.0)

Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 5,9 f  
Edition : 29.11.91  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 400 846 600  
  
Injection pump  
Pump designation : PES6A90D410RS2818  
EP type number : 0 410 896 091  
Governor  
Governor design. : RQV300...1500AB1266L  
Governor no. : 0 420 212 236

Customer-spec. information  
Customer : IVECO-FIAT

Engine : 8060.25.670

1st version kW : 175.0  
Rated speed : 3000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 922 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85  
                  : (2.70...2.90)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 7.9...8.0

100 s: (7.7...8.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.4)

2nd speed rpm : 300.0

Rack travel in mm : 9.4...9.6

Del.quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (1.0...2.0)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 0.90...1.40

2nd speed rpm : 435  
travel mm : 2.00...2.50

3rd speed rpm : 485  
travel mm : 2.30...2.80

4th speed rpm : 640  
travel mm : 3.20...3.70

5th speed rpm : 1610  
travel mm : 8.10...8.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1740

Rack travel in mm : 10.00...12.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1500

Del.quantity : 79.0...80.0

1000 : (77.0...82.0)

Spread cm<sup>3</sup> : 3.00

1000 : (4.50)

## RATED SPEED

1st version

Control lever

position degrees: 117...125

Testing:

1st rack travel in: 11.30

Speed rpm : 1590...1600

2nd rack travel in: 4.00

Speed rpm : 1740...1770

4th rack travel in: 1870

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 72...80

Testing:

Speed rpm : 200

Minimum rack travel: 10.60

Speed rpm : 300

Rack travel in mm : 9.40...9.60

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 1500

Rack travel in m: 12.30...12.40

2nd speed rpm : 500

Rack travel in m: 12.30...12.50

## FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000

Del. quantity cm<sup>3</sup>/ : 74.0...76.0

1000 s: (71.5...78.5)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

Speed rpm : 1590...1600

## STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 145.0...155.0

1000 s: (142.0...158.0)

Rack travel in mm : 19.50...21.00

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 z 1  
 Edition : 22.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 846 603  
 Injection pump  
 Pump designation : PES6A950320RS2779  
 EP type number : 0 410 896 903  
 Governor  
 Governor design. : RQV350...1350AB1251-  
 1R  
 Governor no. : 0 420 213 125

Customer-spec. information  
 Customer : NAVISTAR

Engine : DT 360

1st version kW : 142.0  
 Rated speed : 2700

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 110

Opening  
 pressure, bar : 250...253

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.65...2.75  
 : (2.60...2.80)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1350

Rack travel in mm : 12.30...12.40

Del.quantity cm<sup>3</sup>/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm<sup>3</sup>/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 7.30...7.50

2nd speed rpm : 1460

travel mm : 8.10...8.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350

Aneroid pressure h: 900

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1390...1420  
2nd rack travel in: 4.00  
Speed rpm : 1525...1535  
4th rack travel in: 1625  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 350...500

TORQUE CONTROL  
Dimension a mm : 0.90  
Torque control curve - 1st version  
1st speed rpm : 1350  
Rack travel in m: 12.30...12.40  
2nd speed rpm : 850  
Rack travel in m: 13.20...13.30  
3rd speed rpm : 1200  
Rack travel in m: 12.70...12.90

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.10...9.30  
2nd pressure hPa : 265  
Rack travel in m: 10.30...10.40  
3rd pressure hPa : 560  
Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

B26

1st version  
Aneroid pressure h: 900  
Speed rpm : 850  
Del.quantity cm3/ : 99.0...103.0  
1000 s: (97.0...105.0)  
Spread cm3 : 5.00  
1000 s: (7.00)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 60.5...64.5  
1000 s: (58.5...66.5)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (14.5...23.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:  
: NAVISTAR #1818798C91

Limit shutoff stop screw to 1.0 mm.

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 y 2  
Edition : 22.11.91  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 400 846 604  
Injection pump  
Pump designation : PES6A95D320RS2779  
EP type number : 0 410 896 903  
Governor  
Governor design. : RQV350...1350AB1248-  
2R  
Governor no. : 0 420 213 126

Customer-spec. information  
Customer : NAVISTAR

Engine : DT 360

1st version kW : 127.0  
Rated speed : 2700

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 110

Opening  
pressure, bar : 250...253

Orifice plate  
diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.65...2.75  
: (2.60...2.80)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1350  
Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 7.9...8.1  
100 s: (7.7...8.3)

Spread cm3 : 0.3  
100 s: (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 5.9...6.1  
Del.quantity cm3/ : 1.7...2.1  
100 s: (1.4...2.3)  
Spread cm3 : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
travel mm : 7.30...7.50  
2nd speed rpm : 1460  
travel mm : 8.10...8.50  
3rd speed rpm : 550  
travel mm : 3.10...3.70  
4th speed rpm : 350  
travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1350  
Aneroid pressure h: 900  
Del.quantity : 79.5...81.5  
1000 : (77.5...83.5)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 10.90  
Speed rpm : 1390...1420  
2nd rack travel in: 4.00  
Speed rpm : 1525...1535  
4th rack travel in: 1625  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION  
Speed rpm : 350...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 11.90...12.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 210  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 435  
Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 71.0...75.0  
1000 s: (69.0...77.0)

BREAKAWAY

B28

1st version  
1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1390...1420

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (14.5...23.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:  
: NAVISTAR #1816726C92

Limit shutoff stop screw to 1.0 mm.

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 1 g 31  
 Edition : 29.11.91  
 Replaces : 22.5.87  
 Test oil : ISO-4113  
 Combination no. : 0 400 864 069  
 Injection pump  
 Pump designation : PES4A85D410/3RS2732  
 EP type number : 0 410 884 947  
 Governor  
 Governor design. : RSV325...1175A8C2163  
 -3L  
 Governor no. : 0 420 232 474

Customer-spec. information  
 Customer : KHD

Engine : F4L913

1st version kW : 55.0  
 Rated speed : 2350

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60  
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 9.80...9.90

Del.quantity cm3/ : 6.7...6.8

100 s: (6.5...7.0)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 6.6...6.8

Del.quantity cm3/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

Del.quantity : 67.0...68.0

1000 : (65.0...70.0)

Spread cm3 : 3.00

1000 : (4.50)

## RATED SPEED

1st version

Control lever

position degrees: 103...111

Testing:

1st rack travel in: 8.80

Speed rpm : 1215...1225

2nd rack travel in: 4.00

Speed rpm : 1235...1265

3rd rack travel in: 4.00

Speed rpm : 1255...1285  
4th rack travel in: 1420  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control Lever

position degrees: 65...73

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 325

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 460...520

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1175

Rack travel in m: 9.80...9.90

2nd speed rpm : 500

Rack travel in m: 10.30...10.40

3rd speed rpm : 800

Rack travel in m: 10.20...10.30

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 800

Del.quantity cm3/ : 58.0...60.0  
1000 s: (55.5...62.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.80

Speed rpm : 1215...1225

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)

Rack travel in mm : 17.10...17.30

Remarks:

: TKS2.80

#### APPLICATION

Tractor (tractor engines)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 4,1 k 1  
Edition : 29.11.91  
Replaces : 3.6.91  
Test oil : ISO-4113

Combination no. : 0 400 864 088

Injection pump  
Pump designation : PES4A85D410/3RS2799  
EP type number : 0 410 884 944  
Governor  
Governor design. : RSV325...1250A2C2253  
-2L  
Governor no. : 0 420 232 556

Customer spec. information  
Customer : KHD

Engine : BF4L913

1st version kW : 78.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.45...2.55  
: (2.40...2.60)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 8.4...8.5

100 s: (8.2...8.7)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.5...7.7

Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...2.0)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1000

Del.quantity : 84.0...85.0

1000 : (82.0...87.0)

Spread cm3 : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever

position degrees: 88...96

Testing:

1st rack travel in: 10.70

Speed rpm : 1290...1300

2nd rack travel in: 4.00

Speed rpm : 1320...1350

4th rack travel in: 1480  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 58...66  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 340...400

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.70...11.80  
2nd speed rpm : 500  
Rack travel in m: 12.00...12.10  
4th speed rpm : 800  
Rack travel in m: 11.90...12.10

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.00...12.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.90...11.00  
2nd pressure hPa : 300  
Rack travel in m: 11.80...11.90  
3rd pressure hPa : 230  
Rack travel in m: 11.40...11.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 520  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 80.0...82.0  
1000 s: (77.5...84.5)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 58.0...60.0  
1000 s: (56.0...62.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 17.60...18.00

Remarks:

#### APPLICATION

Compressor

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 k 3  
Edition : 22.11.91  
Replaces : 18.9.91  
Test oil : ISO-4113

Combination no. : 0 400 866 141

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1250AOC2216  
-3R  
Governor no. : 0 420 233 238

Customer-spec. information  
Customer : C.D.C.

Engine : 6 CT 8.3 ltr

1st version kW : 160.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

C05

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.00...12.10

Del.quantity cm<sup>3</sup>/ : 11.8...12.0

100 s: (11.6...12.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

2nd speed rpm : 400.0  
Rack travel in mm : 5.4...5.6  
Del.quantity cm<sup>3</sup>/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm<sup>3</sup> : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 118.5...120.5  
1000 : (116.5...122.5)

Spread cm<sup>3</sup> : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 52...60

Testing:

1st rack travel in: 11.00  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1355...1385  
3rd rack travel in: 4.00  
Speed rpm : 1360...1390  
4th rack travel in: 1450  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 26...34

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 4.90...5.10

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 750  
Rack travel in m: 12.50...12.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 125.0...129.0  
1000 s: (123.0...131.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3915979

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 L 8  
Edition : 22.11.91  
Replaces : 8.7.91  
Test oil : ISO-4113

Combination no. : 0 400 866 150

Injection pump  
Pump designation : PES6A100D320/3RS2763  
EP type number : 0 410 806 006  
Governor  
Governor design. : RSV400...1100AOC2190  
-45R  
Governor no. : 0 420 233 253

Customer-spec. information  
Customer : C.D.C.

Engine : 6CT 8.3

1st version kW : 134.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 10.6...10.8

100 s: (10.4...11.0)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 375.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 2.1...2.5

100 s: (1.8...2.7)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 106.5...108.5

1000 : (104.5...110.5)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 9.90  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1230...1240  
3rd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 31...39  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 375  
Rack travel in mm : 5.90...6.10

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 750  
Rack travel in m: 11.90...12.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 119.5...123.5  
1000 s: (117.5...125.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 375  
Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 21.0...25.0  
1000 s: (18.5...27.5)

Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3915974

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 o  
Edition : 22.11.91  
Replaces : 21.8.91  
Test oil : ISO-4113

Combination no. : 0 400 866 151

Injection pump  
Pump designation : PES6A100D320/3RS2691  
-4

EP type number : 9 410 230 030

Governor

Governor design. : RSV450...1100AOC2238

R

Governer no. : 0 420 233 254

Customer-spec. information

Customer : C.D.C.

Engine : 6CT830

1st version kW : 151.0

Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

C09

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 11.9...12.1

100 s: (11.7...12.3)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.5...1.9

100 s: (1.2...2.1)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 119.0...121.0

1000 : (117.0...123.0)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 42...50

#### Testing:

1st rack travel in: 11.10  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1195...1205  
3rd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.40...5.60

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 750  
Rack travel in m: 13.20...13.40

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.40

#### Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 10.40...10.60  
2nd pressure hPa : 385  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 560  
Rack travel in m: 12.60...13.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 136.5...140.5  
1000 s: (134.5...142.5)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 80.0...82.0  
1000 s: (78.0...84.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 15.0...19.0  
1000 s: (12.5...21.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: C.D.C. # 3915996

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 q  
Edition : 22.11.91  
Replaces : 1.2.90  
Test oil : ISO-4113

Combination no. : 0 400 866 154

Injection pump  
Pump designation : PES6A100D320/3RS2691  
-4

EP type number : 9 410 230 030  
Governor  
Governor design. : RSV450...1100A0C2241  
R  
Governor no. : 0 420 233 256

Customer-spec. information  
Customer : C.D.C.

Engine : 6CT830

1st version kW : 134.2  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
Rack travel in mm : 11.20...11.30  
Del.quantity cm3/ : 10.3...10.5  
100 s: (10.1...10.7)  
Spread cm3 : 0.3  
100 s: (0.6)

2nd speed rpm : 450.0  
Rack travel in mm : 5.7...5.9  
Del.quantity cm3/ : 1.6...2.0  
100 s: (1.4...2.3)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 900  
Del.quantity : 103.5...105.5  
1000 : (101.5...107.5)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 10.20  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
3rd rack travel in: 4.00  
Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 29...37  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.70...5.90

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 750  
Rack travel in m: 12.00...12.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.00...12.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.80  
2nd pressure hPa : 305  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 425  
Rack travel in m: 11.50...11.90

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 750  
Del.quantity cm3/ : 112.5...116.5  
1000 s: (110.5...118.5)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm3/ : 80.0...82.0  
1000 s: (78.0...84.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.70...5.90  
Del.quantity cm3/ : 16.5...20.5  
1000 s: (14.0...23.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:  
: C.D.C. # 3915995

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 a94  
Edition : 22.11.91  
Replaces : 8.7.91  
Test oil : ISO-4113

Combination no. : 0 400 866 172

Injection pump  
Pump designation : PES6A100D320/3RS2691  
EP type number : 9 410 230 025  
Governor  
Governor design. : RSV400...1250A0C2190  
-55R  
Governor no. : 0 420 233 286

Customer-spec. information  
Customer : C.D.C.

Engine : 6 CTA 8.3

1st version kW : 131.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0  
Rack travel in mm : 5.2...5.4  
Del.quantity cm3/ : 1.2...1.6  
100 s: (1.0...1.9)  
Spread cm3 : 0.6  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 99.5...101.5

1000 : (97.5...103.5)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 9.80  
Speed rpm : 1325...1335  
2nd rack travel in: 4.00  
Speed rpm : 1400...1410  
3rd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1500  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.8

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.20...5.40

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1325...1335

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 145.0...165.0  
1000 s: (140.0...170.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 12.5...16.5  
1000 s: (10.0...19.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:  
: C.D.C. # 3920811

Adjust stop lever to 0.5...1.0 mm  
before stop.

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : EIC 2,9 c 5  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 400 873 036  
 Injection pump  
 Pump designation : PES3A90D320RS2626  
 EP type number : 0 410 893 002  
 Governor  
 Governor design. : RSV300...975A1C2171-  
 SR  
 Governor no. : 0 420 233 185

Customer-spec. information  
 Customer : EICHER

Engine : EDL3-2

1st version kW : 40.0  
 Rated speed : 1950

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
 : (2.15...2.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 2

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 11.30...11.40

Del. quantity cm<sup>3</sup>/ : 7.7...7.8

100 s: (7.5...8.0)

Spread cm<sup>3</sup> : 0.2

100 s: (0.5)

2nd speed rpm : 300.0  
 Rack travel in mm : 7.9...8.1  
 Del. quantity cm<sup>3</sup>/ : 1.5...2.5

100 s: (1.3...2.7)

Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 975  
 Del. quantity : 77.0...78.0  
 1000 : (75.0...80.0)  
 Spread cm<sup>3</sup> : 2.50  
 1000 : (5.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 100...108

Testing:  
 1st rack travel in: 10.40  
 Speed rpm : 1015...1025  
 2nd rack travel in: 4.00

Speed rpm : 1045...1075  
3rd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1235  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 300  
Rack travel in mm : 7.90...8.10  
Rack travel in mm : 2.00  
Speed rpm : 400...460

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 69.0...71.0  
1000 s: (66.5...73.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1015...1025

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 133.0...143.0  
1000 s: (130.0...146.0)  
Rack travel in mm : 19.50...21.00

Remarks:

:

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : LIE 5,6 a  
 Edition : 29.11.91  
 Replaces : 1.9.89  
 Test oil : ISO-4113  
 Combination no. : 0 400 874 238  
 Injection pump  
 Pump designation : PES4A95D410RS2685  
 EP type number : 0 410 894 996  
 Governor  
 Governor design. : RSV(40)...1000A1C2187  
 Governor no. : 0 420 232 387

Customer-spec. information  
 Customer : LIEBHERR

Engine : D904 NA

1st version kW : 90.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 415.0  
 Rack travel in mm : 6.6...6.8  
 Del.quantity cm3/ : 1.7...2.1  
 100 s: (1.4...2.3)  
 Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Del.quantity : 114.0...116.0

1000 : (112.0...118.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

1st rack travel in: 11.20  
Speed rpm : 1015...1025  
2nd rack travel in: 4.00  
Speed rpm : 1030...1060  
3rd rack travel in: 4.00  
Speed rpm : 1070...1090  
4th rack travel in: 1230  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 65...73  
Setting point w/out bumper spring  
Speed rpm : 415  
Rack travel in mm : 6.2

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 415  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 535...595

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 975  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 500  
Rack travel in m: 12.20...12.40

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 120.0...130.0  
1000 s: (117.0...133.0)  
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 415  
Rack travel in mm : 6.60...6.80  
Del.quantity cm3/ : 17.0...21.0  
1000 s: (14.5...23.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 5,7 m 13  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 400 876 109

Injection pump  
 Pump designation : PES6A80D410RS2085X  
 EP type number : 0 410 886 045  
 Governor  
 Governor design. : RSV350...1300A2c1005  
 L  
 Governor no. : 0 420 232 405

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM352

1st version kW : 62.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.00

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness : 6.00X2.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.15...2.25  
 : (2.10...2.30)  
 Rack travel in mm : 9.00...12.00

C19

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 8.00...8.10

Del. quantity cm3/ : 3.9...4.0  
 100 s: (3.7...4.1)

Spread cm3 : 0.2  
 100 s: (0.3)

2nd speed rpm : 350.0  
 Rack travel in mm : 6.6...7.2  
 Del. quantity cm3/ : 1.0...1.2  
 100 s: (0.8...1.3)

Spread cm3 : 0.2  
 100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1300  
 Del. quantity : 39.0...40.0  
 1000 : (37.5...41.5)

Spread cm3 : 2.00  
 1000 : (3.50)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 102...110

Testing:  
 1st rack travel in: 7.00  
 Speed rpm : 1340...1345  
 2nd rack travel in: 4.00  
 Speed rpm : 1371...1384  
 3rd rack travel in: 4.00  
 Speed rpm : 1405...1435

4th rack travel in: 1575  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: -3  
Setting point w/out bumper spring  
Speed rpm : 350

#### Testing:

Speed rpm : 100  
Minimum rack travel: 17.50  
Speed rpm : 350  
Rack travel in mm : 6.80...7.00  
Rack travel in mm : 2.00  
Speed rpm : 590...650

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 8.00...8.10  
2nd speed rpm : 500  
Rack travel in m: 9.30...9.40  
3rd speed rpm : 700  
Rack travel in m: 9.20...9.40  
4th speed rpm : 950  
Rack travel in m: 8.30...8.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 37.5...39.5  
1000 s: (35.5...41.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 7.00  
Speed rpm : 1340...1345

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 14.50...14.90

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.60...7.20  
Del.quantity cm<sup>3</sup>/ : 10.0...12.0  
1000 s: (8.5...13.5)

Spread cm<sup>3</sup> : 2.00  
1000 s: (3.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 q  
Edition : 22.11.91  
Replaces : 06.07.90  
Test oil : ISO-4113  
Combination no. : 0 402 036 734  
Injection pump  
Pump designation : PES6P120A720/3LS3247  
EP type number : 0 412 026 735  
Governor  
Governor design. : RQ300/1100PA813-12  
Governor no. : 0 421 801 518

Customer-spec. information  
Customer : MAN

Engine : D2866LXF/A00

1st version kW : 273.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 14.50...15.50  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10  
& maximum rack tra: 14.5...15.5  
Difference ° CS : 2.00...4.00

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 15.00...15.10

Del.quantity cm3/ : 24.2...24.4

100 s: (23.9...24.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.2

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 242.0...244.0

1000 : (239.0...247.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

### Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

### Testing:

1st rack travel in: 13.70  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.0

### Testing:

Speed rpm : 200  
Minimum rack trave: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 365...405

### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.70...14.80  
2nd speed rpm : 700  
Rack travel in m: 15.00...15.10  
3rd speed rpm : 900  
Rack travel in m: 14.80...15.00

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 15.00...15.10

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 110  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 470  
Rack travel in m: 14.00...14.40

### START CUT-OUT

Speed 1/min : 220 (240)

### FUEL DELIVERY CHARACTERISTICS

C22

### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1100  
Del.quantity cm3/ : 230.0...236.0  
1000 s: (227.0...239.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

### BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 13.70  
Speed rpm : 1145...1160

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.80...5.20  
Del.quantity cm3/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

### Remarks:

: MAN-NR. 2-7889

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 8,1 a 1  
Edition : 29.11.91  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 046 345  
Injection pump  
Pump designation : PES6P110A720RS530  
EP type number : 0 412 016 075  
Governor  
Governor design. : RQV300...1000PA1016-  
1  
Governor no. : 0 421 813 966

Customer spec. information  
Customer : IVECO-UNIC

Engine : 8365.25.541

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9.30...9.40

Del.quantity cm<sup>3</sup>/ : 10.4...10.6

100 s: (10.1...10.8)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 450.0

Rack travel in mm : 5.2...5.6

Del.quantity cm<sup>3</sup>/ : 1.3...1.8

100 s: (1.0...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1075

travel mm : 8.60...8.80

2nd speed rpm : 300

travel mm : 1.00...1.40

3rd speed rpm : 450

travel mm : 3.30...3.90

4th speed rpm : 700

travel mm : 5.40...5.80

5th speed rpm : 1300

travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 7.60...10.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del.quantity : 104.0...106.0

1000 : (101.5...108.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 117...125

Testing:

1st rack travel in: 8.30

Speed rpm : 1070...1080

2nd rack travel in: 4.00

Speed rpm : 1130...1160

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 79...87

Testing:

Speed rpm : 300

Minimum rack travel: 8.50

Speed rpm : 450

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 290...410

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 9.30...9.40

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.90...9.10

2nd pressure hPa : 295

Rack travel in m: 9.10...9.20

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 101.0...105.0

1000 s: (98.0...108.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 93.0...95.0

1000 s: (90.5...97.5)

## BREAKAWAY

C24

1st version

1mm rack travel less than

full load rack tr: 8.30

Speed rpm : 1070...1080

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 195.0...225.0

1000 s: (191.0...229.0)

Remarks:

:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 8,1 a 1  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 346  
 Injection pump  
 Pump designation : PES6P110A720RS530  
 EP type number : 0 412 016 075  
 Governor  
 Governor design. : RQV450...1000PA1016-  
 2  
 Governor no. : 0 421 813 967

Customer-spec. information  
 Customer : IVECO-UNIC

Engine : 8365.25.532

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.80...9.90

Del.quantity cm3/ : 11.6...11.8

100 s: (11.4...12.1)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 450.0

Rack travel in mm : 5.4...5.8

Del.quantity cm3/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1095

travel mm : 6.70...6.90

2nd speed rpm : 450

travel mm : 0.70...1.10

3rd speed rpm : 700

travel mm : 3.30...3.90

4th speed rpm : 850

travel mm : 4.80...5.20

5th speed rpm : 1650

travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1430

Rack travel in mm : 8.50...11.10

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 700

Del.quantity : 116.5...118.5

1000 : (114.0...121.0)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 96...106

Testing:  
1st rack travel in: 8.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 66...74

Testing:  
Speed rpm : 375  
Minimum rack travel: 7.70  
Speed rpm : 450  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 510...570

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 9.80...9.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.10...9.30  
2nd pressure hPa : 400  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 380  
Rack travel in m: 9.30...9.50

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 1050  
Del.quantity cm3/ : 113.0...117.0  
1000 s: (110.0...120.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 97.0...99.0  
1000 s: (94.5...101.5)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.80  
Speed rpm : 1090...1100

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 195.0...225.0  
1000 s: (191.0...229.0)

## LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.40...5.80  
Del.quantity cm3/ : 17.0...22.0  
1000 s: (14.5...24.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 8,1 a 3  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 046 347

Injection pump  
 Pump designation : PES6P110A72ORS530  
 EP type number : 0 412 016 075  
 Governor  
 Governor design. : RQV450...1075PA1016-  
 3  
 Governor no. : 0 421 813 968

Customer-spec. information  
 Customer : IVECO-UNIC

Engine : 8365.25.584

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1075

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 12.2...12.4

100 s: (11.9...12.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 450.0

Rack travel in mm : 5.4...5.8

Del.quantity cm3/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1135

travel mm : 7.00...7.20

2nd speed rpm : 450

travel mm : 0.70...1.10

3rd speed rpm : 700

travel mm : 3.30...3.90

4th speed rpm : 950

travel mm : 5.60...6.00

5th speed rpm : 1650

travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1430

Rack travel in mm : 8.50...11.10

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1075

Aneroid pressure h: 700

Del.quantity : 122.0...124.0

1000 : (119.5...126.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 95...103

### Testing:

1st rack travel in: 9.20  
Speed rpm : 1130...1140  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 67...75

### Testing:

Speed rpm : 350  
Minimum rack travel: 8.60  
Speed rpm : 450  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 490...550

Aneroid/Altitude  
Compensator Test

## 1st version

### Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.20...10.30

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 480  
Rack travel in m: 9.80...9.90  
3rd pressure hPa : 440  
Rack travel in m: 9.30...9.50

## FUEL DELIVERY CHARACTERISTICS

## 1st version

Aneroid pressure h: 700  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 125.0...129.0  
1000 s: (122.0...132.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 93.0...95.0  
1000 s: (90.5...97.5)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1130...1140

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 195.0...225.0  
1000 s: (191.0...229.0)

## LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.40...5.80  
Del.quantity cm<sup>3</sup>/ : 17.0...22.0  
1000 s: (14.5...24.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 8,3 a 4  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 348  
 Injection pump  
 Pump designation : PES6P110A720RS530  
 EP type number : 0 412 016 075  
 Governor  
 Governor design. : RQV450...1100PA1016-4  
 Governor no. : 0 421 813 969  
 Customer-spec. information  
 Customer : IVECO-UNIC  
 Engine : 8365.25.533

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.00...2.10  
 : (1.95...2.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 13.8...14.0

100 s: (13.5...14.2)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 450.0

Rack travel in mm : 5.9...6.3

Del.quantity cm3/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1145

travel mm : 6.80...7.00

2nd speed rpm : 450

travel mm : 1.20...1.60

3rd speed rpm : 700

travel mm : 3.30...3.90

4th speed rpm : 950

travel mm : 5.50...5.90

5th speed rpm : 1650

travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1460

Rack travel in mm : 8.80...11.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 700

Del.quantity : 138.0...140.0

1000 : (135.5...142.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 96...104

Testing:  
1st rack travel in: 10.10  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1260...1290  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 66...74

Testing:  
Speed rpm : 325  
Minimum rack travel: 9.60  
Speed rpm : 450  
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION  
Speed rpm : 470...550

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.10...11.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.10...10.30  
2nd pressure hPa : 480  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 440  
Rack travel in m: 10.30...10.50

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 133.0...137.0  
1000 s: (130.0...140.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 111.0...113.0  
1000 s: (108.5...115.5)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1140...1150

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 185.0...215.0  
1000 s: (181.0...219.0)

## LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.90...6.30  
Del.quantity cm<sup>3</sup>/ : 17.0...22.0  
1000 s: (14.5...24.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 8,1 a  
Edition : 20.09.91  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 402 046 349  
  
Injection pump  
Pump designation : PES6P110A720RS530  
EP type number : 0 412 016 075  
Governor  
Governor design. : RQV300...1000PA1016-5  
Governor no. : 0 421 813 970

Customer spec. information  
Customer : IVECO-UNIC

Engine : 8365.25.540

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
  
Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 11.0...11.2

100 s: (10.7...11.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 7.0...7.4

Del.quantity cm3/ : 1.8...2.3

100 s: (1.5...2.5)

Spread cm3 : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1075

travel mm : 8.20...8.40

2nd speed rpm : 300

travel mm : 1.00...1.40

3rd speed rpm : 450

travel mm : 3.30...3.90

4th speed rpm : 700

travel mm : 5.30...5.70

5th speed rpm : 1400

travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1210

Rack travel in mm : 8.30...10.90

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del.quantity : 110.0...112.0

1000 : (107.5...114.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 117...125

### Testing:

1st rack travel in: 9.60  
Speed rpm : 1070...1080  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 66...74

### Testing:

Speed rpm : 200  
Minimum rack travel: 10.00  
Speed rpm : 300  
Rack travel in mm : 7.10...7.30

## CONSTANT REGULATION

Speed rpm : 310...430

Aneroid/Altitude  
Compensator Test

## 1st version

### Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.60...10.70

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 300  
Rack travel in m: 10.40...10.50

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 110.0...114.0  
1000 s: (107.0...117.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 93.0...95.0  
1000 s: (90.5...97.5)

## BREAKAWAY

004

## 1st version

1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1070...1080

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 160.0...180.0  
1000 s: (156.0...184.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.00...7.40  
Del.quantity cm3/ : 18.0...23.0  
1000 s: (15.5...25.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 8,1 b  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 350  
 Injection pump  
 Pump designation : PES6P110A720RS531  
 EP type number : 0 412 016 076  
 Governor  
 Governor design. : RQV300...1100PA1016-  
 7  
 Governor no. : 0 421 813 972

Customer-spec. information  
 Customer : IVECO-UNIC

Engine : 8361.25.510

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.30...10.40

Del.quantity cm<sup>3</sup>/ : 12.0...12.2

100 s: (11.7...12.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm<sup>3</sup>/ : 1.3...1.8

100 s: (1.0...2.0)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1145  
 travel mm : 8.30...8.50

2nd speed rpm : 300  
 travel mm : 0.80...1.20

3rd speed rpm : 500  
 travel mm : 2.50...3.10

4th speed rpm : 750  
 travel mm : 4.50...4.90

5th speed rpm : 1350  
 travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1240

Rack travel in mm : 8.00...10.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del.quantity : 120.0...122.0

1000 : (117.5...124.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 9.30  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 63...71

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30

CONSTANT REGULATION  
Speed rpm : 370...490

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.30...10.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.10...9.20  
2nd pressure hPa : 465  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 430  
Rack travel in m: 9.40...9.60

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 1100  
Del.quantity cm3/ : 96.0...98.0  
1000 s: (93.5...100.5)

## BREAKAWAY

1st version

D06

1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 1140...1150

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 215.0...245.0  
1000 s: (211.0...249.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.00...6.40  
Del.quantity cm3/ : 13.0...18.0  
1000 s: (10.5...20.5)  
Spread cm3 : 4.50  
1000 s: (7.50)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ROL 12,2 i1  
Edition : 20.09.91  
Replaces : 26.7.91  
Test oil : ISO-4113

Combination no. : 0 402 046 779

Injection pump  
Pump designation : PES6P120A320RS3170-1  
EP type number : 0 412 026 726  
Governor  
Governor design. : RQ750PA826-1  
Governor no. : 0 421 801 366

Customer-spec. information  
Customer : PERKINS

Engine : EAGLE LE

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8

100 s: (1.2)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Del.quantity : 212.0...214.0

1000 : (209.0...217.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 26...34

### Testing:

1st rack travel in: 12.10

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 776...791

4th rack travel in: 900

Speed rpm : 0.00...1.00

## START CUT-OUT

Speed 1/min : 690 (0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 750...755

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 180.0...220.0  
1000 s: (176.0...224.0)

Remarks:

:

#### APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 7,7 a  
Edition : 08.10.91  
Replaces : 23.8.91  
Test oil : ISO-4113  
  
Combination no. : 0 402 046 815  
  
Injection pump  
Pump designation : PES6P120A720RS3249  
EP type number : 0 412 026 737  
Governor  
Governor design. : RQV300...1100PA954K  
Governor no. : 0 421 815 243

Customer-spec. information  
Customer : IVECO-UNIC

Engine : 8360.46.417

1st version kW : 196.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 20.5...20.7

100 s: (20.2...21.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.6...5.0

Del.quantity cm3/ : 2.2...2.8  
100 s: (1.9...3.1)

Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1160  
travel mm : 10.60...10.80

2nd speed rpm : 300  
travel mm : 1.00...1.40

3rd speed rpm : 850  
travel mm : 6.60...7.00

4th speed rpm : 1350  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1500

Del.quantity : 205.0...207.0

1000 : (202.0...210.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

#### Testing:

1st rack travel in: 11.30  
Speed rpm : 1170...1180  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 13...21

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 340...400

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.30...12.50  
2nd speed rpm : 850  
Rack travel in m: 11.60...11.90  
3rd speed rpm : 700  
Rack travel in m: 11.00...11.30  
4th speed rpm : 300  
Rack travel in m: 8.50...8.80

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 1100  
Pressure hPa : 1500  
Rack travel mm : 12.30...12.40

#### Measurement

Speed 1/min : 1100

1st pressure hPa : -  
Rack travel in m: 8.10...8.30  
2nd pressure hPa : 840  
Rack travel in m: 12.10...12.20  
3rd pressure hPa : 410  
Rack travel in m: 9.90...10.30

#### START CUT-OUT

Speed 1/min : 240 (260)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1500  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 169.0...175.0  
1000 s: (166.0...178.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 96.0...98.0  
1000 s: (93.0...101.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1170...1180

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0  
1000 s: (96.0...124.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.60...5.00  
Del.quantity cm<sup>3</sup>/ : 22.0...28.0  
1000 s: (19.0...31.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 6,2 L  
Edition : 29.11.91  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 046 822  
Injection pump  
Pump designation : PES6P110A320RS3278  
EP type number : 0 412 016 735  
Governor  
Governor design. : RQ750PA1000  
Governor no. : 0 421 801 584

Customer-spec. information  
Customer : RVI

Engine : MIDR 060226

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
: (4.75...4.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.20...12.30

Del.quantity cm3/ : 11.4...11.7

100 s: (11.1...11.9)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 7.1...7.5

Del.quantity cm3/ : 1.3...1.8

100 s: (1.0...2.0)

Spread cm3 : 0.4

100 s: (0.7)

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 700

Del.quantity : 114.0...117.0

1000 : (111.5...119.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

### 1st version

#### Testing:

1st rack travel in: 11.20

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 790...803

4th rack travel in: 900

Speed rpm : 0.00...1.00

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

## APPLICATION

Generator set

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 q  
Edition : 18.09.91  
Replaces : 2.8.91  
Test oil : ISO-4113

Combination no. : 0 402 046 827

Injection pump  
Pump designation : PES6P120A32ORS3284  
EP type number : 0 412 026 749  
Governor  
Governor design. : RQ275/1050PA999-3  
Governor no. : 0 421 801 598

Customer-spec. information  
Customer : RVI

Engine : MIDR/PR 062045

1st version kW : 186.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 9.90...10.00

Del.quantity cm3/ : 14.3...14.5

100 s: (14.0...14.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.3...4.7

Del.quantity cm3/ : 1.5...2.1  
100 s: (1.2...2.4)

Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del.quantity : 143.0...145.0

1000 : (140.0...148.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 8.90

Speed rpm : 1130...1145

2nd rack travel in: 4.00

Speed rpm : 1195...1225  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275

Rack travel in mm : 5.4

#### Testing:

Speed rpm : 200

Minimum rack trave: 6.20

Speed rpm : 275

Rack travel in mm : 4.40...4.60

Rack travel in mm : 2.00

Speed rpm : 320...360

#### TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 700

Rack travel in m: 10.30...10.40

2nd speed rpm : 1050

Rack travel in m: 10.20...10.40

#### Aneroid/Altitude

Compensator Test

#### 1st version

Setting

Speed rpm : 500

Pressure hPa : 1000

Rack travel mm : 9.90...10.00

#### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.70...8.90

2nd pressure hPa : 200

Rack travel in m: 9.40...9.50

3rd pressure hPa : 140

Rack travel in m: 9.00...9.20

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000

Speed rpm : 1050

Del.quantity cm3/ : 140.0...146.0

1000 s: (137.0...149.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 100.0...102.0  
1000 s: (97.0...105.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90

Speed rpm : 1130...1145

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 145.0...175.0

1000 s: (141.0...179.0)

#### LOW IDLE

Speed rpm : 275

Rack travel in mm : 4.30...4.70

Del.quantity cm3/ : 15.0...21.0

1000 s: (12.0...24.0)

Spread cm3 : 8.00

1000 s: (12.00)

#### Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 12,0 L  
Edition : 29.11.91  
Replaces : 2.8.91  
Test oil : ISO-4113  
Combination no. : 0 402 046 828  
Injection pump  
Pump designation : PES6P120A320RS3288  
EP type number : 0 412 026 750  
Governor  
Governor design. : RQV275...1000PA995-2  
Governor no. : 0 421 813 940

Customer-spec. information  
Customer : RVI

Engine : MIDR 063540 M/3

1st version kW : 236.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.35...3.45  
: (3.30...3.50)  
Rack travel in mm : 18.00...21.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 11.70...11.80

Del.quantity cm3/ : 22.4...22.6

100 s: (22.1...22.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 4.4...4.8  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1070  
travel mm : 8.30 ..8.50  
2nd speed rpm : 275  
travel mm : 1.20...1.40  
3rd speed rpm : 500  
travel mm : 3.60...4.20  
4th speed rpm : 750  
travel mm : 5.70...6.10  
5th speed rpm : 1450  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1180  
Rack travel in mm : 9.40...12.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 1000  
Del.quantity : 224.0...226.0  
1000 : (221.0...229.0)



Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 296...304

#### Testing:

1st rack travel in: 10.70  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 244...252

#### Testing:

Speed rpm : 200  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 4.50...4.70

#### CONSTANT REGULATION

Speed rpm : 310...420

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.70...11.80

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.40...9.80  
2nd pressure hPa : 280  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 160  
Rack travel in m: 10.00...10.20

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1000

Del.quantity cm<sup>3</sup>/ : 214.0...220.0  
1000 s: (211.0...223.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 150.0...152.0  
1000 s: (147.0...155.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1065...1075

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (156.0...194.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.40...4.80  
Del.quantity cm<sup>3</sup>/ : 16.0...22.0  
1000 s: (13.0...25.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 s  
Edition : 08.10.91  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 046 830  
Injection pump  
Pump designation : PES6P120A320RS3290  
EP type number : 0 412 026 751  
Governor  
Governor design. : RQ275/950PA999-4  
Governor no. : 0 421 801 612

Customer-spec. information  
Customer : RVI

Engine : MIDR/PRO62045

1st version kW : 151.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
: (4.15...4.35)  
Rack travel in mm : 18.00...21.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 13.9...14.1

100 s: (13.6...14.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0  
Rack travel in mm : 4.3...4.5  
Del.quantity cm3/ : 1.7...2.3  
100 s: (1.4...2.6)  
Spread cm3 : 0.8  
100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 500

Aneroid pressure h: 1000

Del.quantity : 139.0...141.0

1000 : (136.0...144.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80

Speed rpm : 1010...1025

2nd rack travel in: 4.00

Speed rpm : 1095...1125  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 8.4

#### Testing:

Speed rpm : 200  
Minimum rack travel: 6.10  
Speed rpm : 275  
Rack travel in mm : 4.30...4.50  
Rack travel in mm : 2.00  
Speed rpm : 315...355

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 500  
Rack travel in m: 13.20...13.30  
2nd speed rpm : 950  
Rack travel in m: 13.10...13.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.80...12.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.20...12.30  
2nd pressure hPa : 140  
Rack travel in m: 12.40...12.60

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 148.0...154.0  
1000 s: (145.0...157.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 128.0...130.0  
1000 s: (125.0...133.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1010...1025

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...170.0  
1000 s: (136.0...174.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.30...4.50

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 9,6 y 1  
 Edition : 29.11.91  
 Replaces : 27.9.91  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 832  
 Injection pump  
 Pump designation : PES6P110A720RS3104  
 EP type number : 0 412 016 712  
 Governor  
 Governor design. : RQV350...1100PA850-6  
 Governor no. : 0 421 813 975

Customer-spec. information  
 Customer : KHD

Engine : BF6L513RC

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 16.3...16.5

100 s : (16.0...16.8)

Spread cm3 : 0.4

100 s : (0.7)

2nd speed rpm : 350.0  
 Rack travel in mm : 7.8...8.0  
 Del.quantity cm3/ : 1.6...2.1  
 100 s : (1.4...2.4)  
 Spread cm3 : 0.4  
 100 s : (0.7)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.10...1.30  
 2nd speed rpm : 410  
 travel mm : 2.60...3.20  
 3rd speed rpm : 590  
 travel mm : 3.90...4.50  
 4th speed rpm : 1160  
 travel mm : 8.60...8.80  
 5th speed rpm : 1215  
 travel mm : 9.80...10.20

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1140  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 900  
 Del.quantity : 163.0...165.0  
 1000 : (160.0...168.0)  
 Spread cm3 : 4.00  
 1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 116...124

Testing:  
1st rack travel in: 12.90  
Speed rpm : 1130...1140  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1310  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 84...92

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 350  
Rack travel in mm : 7.80...8.00

CONSTANT REGULATION  
Speed rpm : 400...470

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.90...14.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 12.30...12.50  
2nd pressure hPa : 450  
Rack travel in m: 13.40...13.50  
3rd pressure hPa : 370  
Rack travel in m: 12.70...12.90

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm3/ : 162.0...166.0  
1000 s: (159.0...169.0)  
Spread cm3 : 6.00  
1000 s: (9.00)  
Aneroid pressure h: -

Speed rpm : 450  
Del.quantity cm3/ : 123.0...125.0  
1000 s: (120.0...128.0)  
Spread cm3 : 4.00  
1000 s: (7.50)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.90  
Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 170.0...200.0  
1000 s: (166.0...204.0)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 12,0 L  
 Edition : 08.10.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 833  
 Injection pump  
 Pump designation : PES6P120A320RS3295  
 EP type number : 0 412 026 752  
 Governor  
 Governor design. : RQV275...1000PA995-3  
 Governor no. : 0 421 813 977

Customer spec. information  
 Customer : RVI

Engine : MIDR 063540 L/3

1st version kW : 283.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.70...2.80  
 : (2.65...2.85)  
 Rack travel in mm : 18.00...21.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 27.1...27.3

100 s: (26.8...27.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1070  
 travel mm : 8.20 ...8.40

2nd speed rpm : 275  
 travel mm : 1.20...1.40

3rd speed rpm : 500  
 travel mm : 3.60...4.20

4th speed rpm : 750  
 travel mm : 5.70...6.10

5th speed rpm : 1450  
 travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1165

Rack travel in mm : 11.90...13.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 271.0...273.0

1000 : (268.0...276.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

##### 1st version

Control lever  
position degrees: 298...306

##### Setting point:

Speed rpm : 1165  
Rack travel in mm : 12.7

##### Testing:

1st rack travel in: 12.20  
Speed rpm : 1065...1075  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

##### LOW IDLE 1

Control lever  
position degrees: 244...252

##### Testing:

Speed rpm : 200  
Minimum rack travel: 7.30  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40

##### CONSTANT REGULATION

Speed rpm : 310...420

##### Aneroid/Altitude Compensator Test

##### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.20...13.30

##### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.50...8.70

2nd pressure hPa : 880

Rack travel in m: 12.10...12.20

3rd pressure hPa : 320

Rack travel in m: 9.30...9.70

##### START CUT-OUT

Speed 1/min : 195 (215)

##### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1000

Speed rpm : 1000

Del.quantity cm3/ : 247.0...253.0  
1000 s: (244.0...256.0)

Speed rpm : 600

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 105.0...10.7  
1000 s: (102.0...13.7)

##### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 12.20

Speed rpm : 1065...1075

##### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 155.0...185.0  
1000 s: (151.0...189.0)

##### LOW IDLE

Speed rpm : 300

Rack travel in mm : 5.20...5.40

Del.quantity cm3/ : 20.0...26.0  
1000 s: (17.0...29.0)

Spread cm3 : 8.00  
1000 s: (12.00)

##### Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 y 2  
Edition : 22.11.91  
Replaces : 21.8.92  
Test oil : ISO-4113

Combination no. : 0 402 076 742

Injection pump  
Pump designation : PES6P120A720RS3203  
EP type number : 0 412 026 728  
Governor  
Governor design. : RSV400...1050P2A534-  
7  
Governor no. : 0 421 833 356

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6076 HZ030

1st version kW : 193.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 15.4...15.6

100 s: (15.2...15.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 6.2...6.4

Del.quantity cm3/ : 3.0...3.6

100 s: (2.8...3.8)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del.quantity : 154.5...156.5

1000 : (152.5...158.5)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 1...49



### Testing:

1st rack travel in: 11.10  
Speed rpm : 1095...1105  
2nd rack travel in: 4.00  
Speed rpm : 1155...1165  
3rd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.8

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.20...6.40

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 700  
Rack travel in m: 13.60...13.80

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.60...13.80

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 375  
Rack travel in m: 11.20...11.60  
3rd pressure hPa : 590  
Rack travel in m: 12.70...12.90

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 188.5...194.5  
1000 s: (185.5...197.5)  
Aneroid pressure h: -  
Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 116.5...120.5  
1000 s: (114.5...122.5)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1095...1105

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...110.0  
1000 s: (85.0...115.0)  
Rack travel in mm : 20.00...21.00

### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.20...6.40  
Del.quantity cm<sup>3</sup>/ : 30.0...36.0  
1000 s: (28.0...38.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

### Remarks:

: JOHN DEERE # RE47549

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 y 3  
 Edition : 22.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 743  
 Injection pump  
 Pump designation : PES6P120A72ORS3203  
 EP type number : 0 412 026 728  
 Governor  
 Governor design. : RSV425...1100P2A534-  
 8  
 Governor no. : 0 421 833 370

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6076 AN 030

1st version kW : 187.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness : 6.00X3.00X600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
 : (3.50...3.70)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 11.80...11.90  
 Del.quantity cm3/ : 15.0...15.2  
 100 s: (14.7...15.4)  
 Spread cm3 : 0.4  
 100 s: (0.6)

2nd speed rpm : 425.0  
 Rack travel in mm : 5.7...5.9  
 Del.quantity cm3/ : 2.8...3.2  
 100 s: (2.5...3.4)  
 Spread cm3 : 0.6  
 100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 1200  
 Del.quantity : 150.0...152.0  
 1000 : (147.5...154.5)  
 Spread cm3 : 4.00  
 1000 : (6.50)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 40...48

#### Testing:

1st rack travel in: 10.80  
Speed rpm : 1150...1160  
2nd rack travel in: 4.00  
Speed rpm : 1220...1230  
3rd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 5.70...5.90

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 700  
Rack travel in m: 12.60...12.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.60...12.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.40...10.60  
2nd pressure hPa : 720  
Rack travel in m: 11.00...11.10  
3rd pressure hPa : 895  
Rack travel in m: 11.80...12.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 173.5...178.5  
1000 s: (171.0...181.0)  
Aneroid pressure h: -  
Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 120.0...124.0  
1000 s: (117.0...127.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1150...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...110.0  
1000 s: (85.0...115.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 28.0...32.0  
1000 s: (25.5...34.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

#### Remarks:

: JOHN DEERE # RE47394

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 21,0 b4  
 Edition : 22.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 640 815A  
 Injection pump  
 Pump designation : PE12P120A520LS7824  
 EP type number : 0 412 620 816  
 Governor  
 Governor design. : RQV300...1150PA902-4  
 Governor no. : 0 421 813 870

Cust. part no. : 3-7003

Customer-spec. information  
 Customer : MAN

Engine : D2842LYE

1st version kW : 588.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60  
 : (4.45...4.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 26.4...26.6

100 s: (26.1...26.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 500  
 Rack travel in mm : 9.1...9.3  
 Del.quantity cm3/ : 14.9...15.1  
 100 s: (14.6...15.4)

Spread cm3 : 0.8  
 100 s: (1.2)

3rd speed rpm : 300  
 Rack travel in mm : 7.20...7.40  
 Del.quantity cm3/ : 5.2...6.0 \*  
 100 s: (-)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.20...1.60

2nd speed rpm : 450  
 travel mm : 2.90...3.50

3rd speed rpm : 750  
 travel mm : 5.60...6.00

4th speed rpm : 1150  
 travel mm : 9.50...9.70

5th speed rpm : 1400  
 travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1200  
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050  
Aneroid pressure h: 1300  
Del.quantity : 264.0...266.0  
1000 : (261.0...269.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control Lever  
position degrees: 118...126

Testing:

1st rack travel in: 12.60  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 79...87

Testing:

Speed rpm : 100  
Minimum rack travel: 8.90  
Speed rpm : 300  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 470...530

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1300  
Rack travel mm : 13.60...13.70

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.10...9.30  
2nd pressure hPa : 100  
Rack travel in m: 9.50...9.60  
3rd pressure hPa : 470  
Rack travel in m: 12.40...12.80

START CUT-OUT

D27

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...120.0 \*  
1000 s: (-)

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : -  
1000 s: (-)  
Rack travel in mm : 17.5...21.0

HIGH IDLE

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Rack travel in mm : < 7.00  
Del.quantity cm<sup>3</sup>/ : - \*\*  
1000 s: (-)

2nd version

Aneroid pressure h: -  
Speed rpm : 500  
Rack travel in mm : < 7.50  
Del.quantity cm<sup>3</sup>/ : < 50.0  
1000 s: (-)

3rd version

Aneroid pressure h: -  
Speed rpm : 500  
Rack travel in mm : 8.40...8.60  
Del.quantity cm<sup>3</sup>/ : 125.0...200.0  
1000 s: (-)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.20...7.40  
Del.quantity cm<sup>3</sup>/ : 52.0...60.0 \*  
1000 s: (-)

Remarks:

:

\* applies to cylinders 4, 5, 6, 8 ,10  
and 12

\*\* applies for cylinders 1, 2, 3, 7, 9  
and 11

APPLICATION

Ship

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 21,9 u 1  
Edition : 29.11.91  
Replaces : 18.1.91  
Test oil : ISO-4113  
  
Combination no. : 0 402 640 823  
  
Injection pump  
Pump designation : PE12P120A320LS7805  
EP type number : 0 412 620 802  
Governor  
Governor design. : RQV350...1050PA781-1  
Governor no. : 0 421 813 890

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 485.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 150...160

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 12- 1- 5- 9- 8- 3-  
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
180-225-240-285-300-  
345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.40...14.50

Del.quantity cm3/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 5.4...6.0  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)

Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.30...1.80  
2nd speed rpm : 454  
travel mm : 2.80...3.30  
3rd speed rpm : 900  
travel mm : 5.40...5.90  
4th speed rpm : 1107  
travel mm : 7.80...8.30  
5th speed rpm : 1204  
travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1180  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050  
Aneroid pressure h: 1100  
Del.quantity : 211.0...213.0  
1000 : (208.0...216.0)  
Spread cm3 : 5.00  
1000 : (9.00)

### RATED SPEED

#### 1st version

Control lever  
position degrees: 116...124

#### Testing:

1st rack travel in: 13.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 64...72

#### Testing:

Speed rpm : 250  
Minimum rack trave: 7.00  
Speed rpm : 350  
Rack travel in mm : 5.40...6.00

#### CONSTANT REGULATION

Speed rpm : 400...600

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.00...11.30

##### Measurement

Speed 1/min : 500

1st pressure hPa : 350  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 500  
Rack travel in m: 13.00...13.30

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

E02

### 1st version

Aneroid pressure h: 1100  
Speed rpm : 600  
Del.quantity cm3/ : 210.0...213.0  
1000 s: (207.0...216.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 141.0...143.0  
1000 s: (138.0...146.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.40  
Speed rpm : 1090...1100

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

### TESTING & SETTING

#### RACK TRAVEL SENSOR

Supply voltage : 24  
Set quantity with control lever  
cm3/ : 14.0...20.0  
1000 s: (-)  
Voltage : 0.340...0.342  
Rack travel in mm : 12.0  
Voltage volt : 0.578...0.548

Remarks:

### APPLICATION

Rail car

Rail car



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 16,2 b2  
Edition : 29.11.91  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 646 857C  
Injection pump  
Pump designation : PE6P130A720RS7150  
EP type number : 0 412 636 808  
Governor  
Governor design. : RQV250...900PA881  
Governor no. : 0 421 813 676

Customer-spec. information  
Customer : PENTA

Engine : TAMD 162 A (PD)

1st version kW : 450.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 38.3...38.5

100 s: (37.9...38.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 3.7...3.9

Del.quantity cm3/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 0.90...1.30

2nd speed rpm : 350  
travel mm : 2.00...2.60

3rd speed rpm : 700  
travel mm : 3.90...4.50

4th speed rpm : 1075  
travel mm : 8.10...8.30

5th speed rpm : 1160  
travel mm : 9.30...9.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 383.0...385.0  
1000 : (379.0...389.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

#### Testing:

1st rack travel in: 11.60  
Speed rpm : 1070...1080  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 63...71

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.30  
Speed rpm : 250  
Rack travel in mm : 3.70...3.90

#### CONSTANT REGULATION

Speed rpm : 250...400

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.60...12.70

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.60...8.80  
2nd pressure hPa : 340  
Rack travel in m: 8.80...8.90  
3rd pressure hPa : 970  
Rack travel in m: 12.20...12.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 215.0...219.0  
1000 s: (212.0...222.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1070...1080

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.70...3.90  
Del.quantity cm3/ : 17.0...22.0  
1000 s: (14.5...24.5)  
Spread cm3 : 5.00  
1000 s: (7.00)

Remarks:

:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 3.0...3.1 mm.

#### APPLICATION

Ship

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 11,1 j2  
Edition : 22.11.91  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 646 866

Injection pump  
Pump designation : PE6P120A720RS7020  
EP type number : 0 412 626 828  
Governor  
Governor design. : RQ200/1000PA713-8  
Governor no. : 0 421 801 517

Customer-spec. information  
Customer : SCANIA

Engine : DS11 74

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 15.9...16.1

100 s: (15.6...16.4)

Spread cm3 : 0.5

100 s: (0.8)

2nd speed rpm : 225.0

Rack travel in mm : 4.6...5.0

Del.quantity cm3/ : 1.8...2.2

100 s: (-)

Spread cm3 : 0.3

100 s: (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 159.0...161.0

1000 : (156.0...164.0)

Spread cm3 : 5.00

1000 : (8.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.5

Testing:

1st rack travel in: 9.90

Speed rpm : 1045...1060

2nd rack travel in: 4.00

Speed rpm : 1185...1215

4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 225

Rack travel in mm : 4.7

#### Testing:

Speed rpm : 100

Minimum rack trave: 6.20

Speed rpm : 225

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

Speed rpm : 305...345

Aneroid/Altitude

Compensator Test

#### 1st version

##### Setting

Speed rpm : 500

Pressure hPa : 900

Rack travel mm : 10.90...11.00

##### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.20...9.60

2nd pressure hPa : 150

Rack travel in m: 9.90...10.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900

Speed rpm : 1000

Del.quantity cm3/ : 157.0...165.0

1000 s: (155.0...167.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 116.0...120.0

1000 s: (114.0...122.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.90

Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100

E06

Del.quantity cm3/ : 275.0...325.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 225

Rack travel in mm : 4.60...4.80

Remarks:

:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

#### APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 11,1 b4  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 880  
 Injection pump  
 Pump designation : PE6P120A720RS7126  
 EP type number : 0 412 626 815  
 Governor  
 Governor design. : RQV200...1050PA725-5  
 Governor no. : 0 421 813 814

Customer-spec. information  
 Customer : SCANIA

Engine : DS 11

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.10...14.20

Del.quantity cm3/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 225.0

Rack travel in mm : 4.5...4.9

Del.quantity cm3/ : 1.5...1.9

100 s: (-)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 225  
 travel mm : 1.20...1.60

2nd speed rpm : 350  
 travel mm : 2.30...2.90

3rd speed rpm : 650  
 travel mm : 4.00...4.60

4th speed rpm : 1095  
 travel mm : 8.20...8.40

5th speed rpm : 1215  
 travel mm : 9.70...10.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1200

Rack travel in mm : 8.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 113...121

#### Testing:

1st rack travel in: 13.10  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1320  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 60...68

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.10  
Speed rpm : 225  
Rack travel in mm : 4.50...4.70  
Rack travel in mm : 2.00  
Speed rpm : 360...420

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.10...14.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.90  
2nd pressure hPa : 510  
Rack travel in m: 13.00...13.10  
3rd pressure hPa : 250  
Rack travel in m: 11.10...11.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 222.0...230.0  
1000 s: (220.0...232.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 150.0...154.0  
1000 s: (148.0...156.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.10  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 275.0...325.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 225  
Rack travel in mm : 4.50...4.70

#### Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

#### ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO  
diaphragm.

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania  
on November 29, 1990

Engine model DSI 11 - 16° before top  
dead center.

Firing sequence of engine:  
1-5-3-6-2-4.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 k7  
Edition : 27.09.91  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 4G2 646 894  
  
Injection pump  
Pump designation : PE6P120A32ORS7194  
EP type number : 0 412 626 834  
Governor  
Governor design. : RQ250/1000PA936  
Governor no. : 0 421 801 507

Cust. part no. : T3

Customer-spec. information  
Customer : DAF

Engine : WS 295

1st version kW : 295.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

ED9

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850  

---

Rack travel in mm : 13.70...13.80  

---

Del.quantity cm3/ : 24.5...24.7  
100 s: (24.2...25.0)  

---

Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : 7.6...8.0  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 550  
Rack travel in mm : 15.20...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 850  
Aneroid pressure h: 1000  
Del.quantity : 245.0...247.0  
1000 : (242.0...250.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 550  
Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.70  
Speed rpm : 1035...1050  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 7.0

Testing:

Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 250  
Rack travel in mm : 6.90...7.10  
Rack travel in mm : 2.00  
Speed rpm : 345...385

TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 14.70...14.80  
2nd speed rpm : 1000  
Rack travel in m: 14.60...14.80

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 11.00...11.20

2nd pressure hPa : 460

Rack travel in m: 13.00...13.10

3rd pressure hPa : 310

Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600

Del. quantity cm<sup>3</sup>/ : 171.0...173.0  
1000 s: (168.0...176.0)

BREAKAWAY

E10

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.90...7.10

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 j3  
 Edition : 27.09.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 895  
 Injection pump  
 Pump designation : PE6P120A320RS7202  
 EP type number : 0 412 626 835  
 Governor  
 Governor design. : RQV250...1000PA939  
 Governor no. : 0 421 813 829

Customer-spec. information  
 Customer : DAF

Engine : WS 268

1st version kW : 268.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.90...12.00

Del.quantity cm3/ : 21.7...21.9

100 s: (21.4...22.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.9...5.3

Del.quantity cm3/ : 2.3...2.9

100 s: (2.0...3.2)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 0.70...1.10

2nd speed rpm : 400  
 travel mm : 2.50...3.10

3rd speed rpm : 700  
 travel mm : 4.50...4.90

4th speed rpm : 1045  
 travel mm : 7.80...8.00

5th speed rpm : 1350  
 travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 217.0...219.0  
1000 : (214.0...222.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 113...121

#### Testing:

1st rack travel in: 10.90  
Speed rpm : 1030...1040  
2nd rack travel in: 4.00  
Speed rpm : 1120...1150  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Control lever  
position degrees: 74...82

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.60  
Speed rpm : 250  
Rack travel in mm : 5.00...5.20

#### CONSTANT REGULATION

Speed rpm : 270...380

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 11.90...12.00

##### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.40...9.60  
2nd pressure hPa : 320  
Rack travel in m: 11.10...11.20  
3rd pressure hPa : 190  
Rack travel in m: 10.10...10.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 153.0...155.0  
1000 s: (150.0...158.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1030...1040

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.90...5.30  
Del.quantity cm3/ : 23.0...29.0  
1000 s: (20.0...32.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 k8  
Edition : 27.09.91  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 646 896  
Injection pump  
Pump designation : PE6P120A32ORS7194  
EP type number : 0 412 626 834  
Governor  
Governor design. : RQV250...1000PA939  
Governor no. : 0 421 813 829

Cust. part no. : T3

Customer-spec. information  
Customer : DAF

Engine : WS 295

1st version kW : 295.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.25)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850  
Rack travel in mm : 13.70...13.80  
Del.quantity cm3/ : 24.5...24.7  
100 s: (24.2...25.0)  
Spread cm3 : 0.5  
100 s: (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : 7.6...8.0  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 0.70...1.10  
2nd speed rpm : 400  
travel mm : 2.50...3.10  
3rd speed rpm : 700  
travel mm : 4.50...4.90  
4th speed rpm : 1045  
travel mm : 7.80...8.00  
5th speed rpm : 1350  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1125  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850  
Aneroid pressure h: 1000  
Del.quantity : 245.0...247.0  
1000 : (242.0...250.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 115...123

#### Testing:

1st rack travel in: 12.70  
Speed rpm : 1030...1040  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Control lever  
position degrees: 81...89

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 250  
Rack travel in mm : 6.90...7.10

#### CONSTANT REGULATION

Speed rpm : 275...385

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 13.70...13.80

##### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.00...11.20  
2nd pressure hPa : 460  
Rack travel in m: 13.00...13.10  
3rd pressure hPa : 310  
Rack travel in m: 12.00...12.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600

Del.quantity cm3/ : 171.0...173.0  
1000 s: (168.0...176.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1030...1040

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.90...7.10

#### Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 11,1 L2  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 904  
 Injection pump  
 Pump designation : PE6P120A720RS7126  
 EP type number : 0 412 626 815  
 Governor  
 Governor design. : RQV300...900PA795-10  
 Governor no. : 0 421 813 846

Customer-spec. information  
 Customer : SCANIA

Engine : DS11

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve  
 : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700  
 Rack travel in mm : 14.10...14.20  
 Del.quantity cm3/ : 23.4...23.6  
 100 s: (23.1...23.9)  
 Spread cm3 : 0.6  
 100 s: (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 4.4...4.8  
 Del.quantity cm3/ : 1.5...1.9  
 100 s: (-)  
 Spread cm3 : 0.3  
 100 s: (0.6)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 1.30...1.70  
 2nd speed rpm : 350  
 travel mm : 1.90...2.50  
 3rd speed rpm : 650  
 travel mm : 4.70...5.30  
 4th speed rpm : 945  
 travel mm : 7.90...8.10  
 5th speed rpm : 1045  
 travel mm : 9.20...9.60

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 970  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 900  
 Del.quantity : 234.0...236.0  
 1000 : (231.0...239.0)

Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 93...101

Testing:  
1st rack travel in: 13.10  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1030...1060  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 61...69

Testing:  
Speed rpm : 100  
Minimum rack travel: 10.00  
Speed rpm : 300  
Rack travel in mm : 4.40...4.60  
Rack travel in mm : 2.00  
Speed rpm : 330...390

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.10...14.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.50...10.90  
2nd pressure hPa : 510  
Rack travel in m: 13.00...13.10  
3rd pressure hPa : 250  
Rack travel in m: 11.10...11.30

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 220.0...228.0  
1000 s: (218.0...230.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 150.0...154.0  
1000 s: (148.0...156.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.10  
Speed rpm : 940...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 275.0...325.0  
1000 s: (-)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.40...4.60

Remarks:  
Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

#### ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO  
diaphragm.

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania  
on November 29, 1990

Engine model DSI 11 - 16° before top  
dead center.

Firing sequence of engine:  
1-5-3-6-2-4.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 L5  
Edition : 27.09.91  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 646 912  
Injection pump  
Pump designation : PE6P120A32ORS7218  
EP type number : 0 412 626 839  
Governor  
Governor design. : RQ250/1000PA936-1  
Governor no. : 0 421 801 508

Cust. part no. : T3

Customer-spec. information  
Customer : DAF

Engine : WS 268 G

1st version kW : 268.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40  
: (5.25...5.45)  
Rack travel in mm : 14.50...15.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 14.5...15.5  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 15.00...15.10

Del.quantity cm3/ : 23.7...23.9

100 s: (23.4...24.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
Rack travel in mm : 6.6...7.0  
Del.quantity cm3/ : 1.4...2.0  
100 s: (1.1...2.3)  
Spread cm3 : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.80...17.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 850  
Aneroid pressure h: 1000  
Del.quantity : 237.0...239.0  
1000 : (234.0...242.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

## 1st version

### Setting point:

Speed rpm : 550  
Rack travel in mm : 16.4

### Testing:

1st rack travel in: 14.00  
Speed rpm : 1035...1050  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.0

### Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 250  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 310...350

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 15.30...15.40  
2nd speed rpm : 1000  
Rack travel in m: 15.20...15.40

### Aneroid/Altitude Compensator Test

## 1st version

### Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 15.00...15.10

### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 480  
Rack travel in m: 14.20...14.30  
3rd pressure hPa : 330  
Rack travel in m: 13.20...13.40

### FUEL DELIVERY CHARACTERISTICS

## 1st version

Aneroid pressure h: -  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 167.0...169.0  
1000 s: (164.0...172.0)

### BREAKAWAY

## 1st version

1mm rack travel less than

full load rack tr: 14.00  
Speed rpm : 1035...1050

### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.90...5.10

### Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 L6  
Edition : 27.09.91  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 646 913  
Injection pump  
Pump designation : PE6P120A320RS7218  
EP type number : 0 412 626 839  
Governor  
Governor design. : RQV250...1000PA939  
Governor no. : 0 421 813 829

Cust. part no. : T3

Customer-spec. information  
Customer : DAF

Engine : WS 268 G

1st version kW : 268.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40  
: (5.25...5.45)  
Rack travel in mm : 14.50...15.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 14.5...15.5  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 15.00...15.10

Del.quantity cm3/ : 23.7...23.9

100 s: (23.4...24.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.0

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
travel mm : 7.80...8.00

2nd speed rpm : 250  
travel mm : 0.70...1.10

3rd speed rpm : 400  
travel mm : 2.50...3.10

4th speed rpm : 700  
travel mm : 4.50...4.90

5th speed rpm : 1350  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125  
Rack travel in mm : 15.20...17.80

#### FULL LOAD DELIV. AT FULL LOAD STOP

##### 1st version

Speed rpm : 850  
Aneroid pressure h: 1000  
Del.quantity : 237.0...239.0  
1000 : (234.0...242.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

##### 1st version

Control lever  
position degrees: 118...126

##### Testing:

1st rack travel in: 14.00  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Control lever  
position degrees: 78...86

##### Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 250  
Rack travel in mm : 4.90...5.10

#### CONSTANT REGULATION

Speed rpm : 270...380

#### Aneroid/Altitude Compensator Test

##### 1st version

##### Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 15.00...15.10

##### Measurement

Speed 1/min : 600

1st pressure hPa : -

Rack travel in m: 12.40...12.60

2nd pressure hPa : 480

Rack travel in m: 14.20...14.30

3rd pressure hPa : 330

Rack travel in m: 13.20...13.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm3/ : 167.0...169.0  
1000 s: (164.0...172.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 14.00

Speed rpm : 1040...1050

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.90...5.10

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 9,6 o  
Edition : 23.10.91  
Replaces : 30.8.91  
Test oil : ISO-4113

Combination no. : 0 402 646 917

Injection pump  
Pump designation : PE6P120A320LS7834  
EP type number : 0 412 626 841  
Governor  
Governor design. : RQ300/950PA971  
Governor no. : 0 421 801 543

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 230.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
(5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del.quantity cm3/ : 22.7...22.9

100 s: (22.4...23.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.9

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1100

Del.quantity : 227.0...229.0

1000 : (224.0...232.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

### Testing:

1st rack travel in: 13.90  
Speed rpm : 990...1005  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1200  
Speed rpm : 0.00...1.50

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.6

### Testing:

Speed rpm : 200  
Minimum rack trave: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.30...6.90  
Rack travel in mm : 2.00  
Speed rpm : 380...420

### TORQUE CONTROL

Dimension a mm : 0.35  
2nd speed rpm : 950  
Rack travel in m: 14.90...15.10  
3rd speed rpm : 800  
Rack travel in m: 15.20...15.40

### Aneroid/Altitude Compensator Test

### 1st version

#### Setting

Speed rpm : 600  
Pressure hPa : 1100  
Rack travel mm : 14.50...14.70

#### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 700  
Rack travel in m: 13.50...13.70  
3rd pressure hPa : 1400  
Rack travel in m: 14.60...14.80 \*  
4th pressure hPa : 1550  
Rack travel in m: 14.90...15.10  
5th pressure hPa : -  
Rack travel in m: 9.30...9.60

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1800  
Speed rpm : 950

Del.quantity cm3/ : 236.0...239.0  
1000 s: (233.0...242.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1800  
Speed rpm : 800  
Del.quantity cm3/ : 243.0...247.0  
1000 s: (240.0...250.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 122.0...124.0  
1000 s: (119.0...127.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

### BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 13.90  
Speed rpm : 990...1005

### Remarks:

:  
\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 13,8 h  
Edition : 29.11.91  
Replaces : 27.5.91  
Test oil : ISO-4113

Combination no. : 0 402 646 923

Injection pump  
Pump designation : PE6P130A720RS7225  
EP type number : 0 412 636 817  
Governor  
Governor design. : RQV300...900PA946  
Governor no. : 0 421 813 845

Customer-spec. information  
Customer : IVECO-UNIC

Engine : 8210.42.061

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)

Rack travel in mm : 11.50...12.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 27.0...27.3

100 s: (26.6...27.6)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 4.4...4.8

Del.quantity cm3/ : 1.9...2.5

100 s: (1.5...2.9)

Spread cm3 : 1.0

100 s: (1.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 945  
travel mm : 8.40...8.60

2nd speed rpm : 300  
travel mm : 1.00...1.40

3rd speed rpm : 500  
travel mm : 3.30...3.90

4th speed rpm : 700  
travel mm : 5.50...5.90

5th speed rpm : 1200  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 935

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 900

Del.quantity : 270.0...273.0

1000 : (266.5...276.5)

Spread cm<sup>3</sup> : 6.00  
1000 : (10.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 11.60  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1015...1045  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 72...80

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.10  
Speed rpm : 300  
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION  
Speed rpm : 320...440

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.60...12.70

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 350  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 300  
Rack travel in m: 10.90...11.20

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 285.0...292.0  
1000 s: (281.5...295.5)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 202.0...205.0  
1000 s: (198.5...208.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 940...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...155.0  
1000 s: (121.0...159.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.40...4.80  
Del.quantity cm<sup>3</sup>/ : 19.0...25.0  
1000 s: (15.0...29.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (14.00)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8,7 c  
Edition : 29.11.91  
Replaces : 3.5.91  
Test oil : ISO-4113

Combination no. : 0 402 646 934

Injection pump  
Pump designation : PE6P120A320RS7229  
EP type number : 0 412 626 844  
Governor  
Governor design. : RQ275/1150PA987  
Governor no. : 0 421 801 578

Customer-spec. information  
Customer : DAF

Engine : RS 200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)

Rack travel in mm : 13.00...14.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.50...5.70  
& maximum rack tra: 13.0...14.0  
Difference ° CS : 3.25...4.75

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 16.3...16.5

100 s: (16.0...16.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1000

Aneroid pressure h: 1000

Del.quantity : 163.0...165.0

1000 : (160.0...168.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.0

#### Testing:

1st rack travel in: 12.50  
Speed rpm : 1185...1200  
2nd rack travel in: 4.00  
Speed rpm : 1270...1300  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.10  
Speed rpm : 275  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 330...370

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 13.80...13.90  
2nd speed rpm : 1150  
Rack travel in m: 13.70...13.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 13.50...13.60

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.70...11.90  
2nd pressure hPa : 180  
Rack travel in m: 12.60...12.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 117.0...119.0  
1000 s: (114.0...122.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 1185...1200

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.50...5.70

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 13,8 h2  
 Edition : 29.11.91  
 Replaces : 8.10.91  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 947  
 Injection pump  
 Pump designation : PE6P130A720RS7225  
 EP type number : 0 412 636 817  
 Governor  
 Governor design. : RQV300...950PA1002  
 -1K  
 Governor no. : 0 421 815 280  
 Customer-spec. information  
 Customer : IVECO-UNIC  
 Engine : 8210.42.400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 105  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 5.00...5.10  
 : (4.95...5.15)

Rack travel in mm : 13.50...14.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.80...13.90

Del.quantity cm3/ : 30.6...30.9

100 s: (30.2...31.2)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.2

Del.quantity cm3/ : 1.9...2.5

100 s: (1.5...2.9)

Spread cm3 : 1.0

100 s: (1.4)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 995  
 travel mm : 8.50...8.70

2nd speed rpm : 300  
 travel mm : 1.00...1.40

3rd speed rpm : 500  
 travel mm : 3.30...3.90

4th speed rpm : 750  
 travel mm : 5.80...6.20

5th speed rpm : 1300  
 travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950

Aneroid pressure h: 900

Del.quantity : 306.0...309.0

1000 : (302.5...312.5)

Spread cm<sup>3</sup> : 6.00  
1000 : (10.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 112...120

#### Testing:

1st rack travel in: 12.80  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1100...1130  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control Lever  
position degrees: 66...74

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.90...5.10

#### CONSTANT REGULATION

Speed rpm : 340...460

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 950  
Rack travel in m: 13.80...13.90  
2nd speed rpm : 750  
Rack travel in m: 13.70...13.90  
3rd speed rpm : 500  
Rack travel in m: 12.50...12.70  
4th speed rpm : 300  
Rack travel in m: 12.10...12.40

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 950  
Pressure hPa : 900  
Rack travel mm : 13.80...13.90

##### Measurement

Speed 1/min : 950

1st pressure hPa : -  
Rack travel in m: 10.50...10.70  
2nd pressure hPa : 560  
Rack travel in m: 12.60...12.70  
3rd pressure hPa : 350

Rack travel in m: 10.80...11.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 900  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 273.0...279.0  
1000 s: (266.5...282.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 195.0...198.0  
1000 s: (191.5...201.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...170.0  
1000 s: (136.0...174.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.80...5.20  
Del.quantity cm<sup>3</sup>/ : 19.0...25.0  
1000 s: (15.0...29.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (14.00)

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 7,2 a  
Edition : 23.10.91  
Replaces : 21.8.91  
Test oil : ISO-4113

Combination no. : 0 402 646 948

Injection pump  
Pump designation : PE6P120A32ORS7233-1  
EP type number : 0 412 626 849  
Governor  
Governor design. : RQV300...1300PA1003K  
Governor no. : 0 421 815 281

Customer-spec. information  
Customer : PENTA

Engine : TAMD 72 A

1st version kW : 316.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.30...3.40  
: (3.25...3.45)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.60...14.70

Del.quantity cm3/ : 27.0...27.2

100 s: (26.7...27.5)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.2

Del.quantity cm3/ : 2.0...2.6

100 s: (1.7...2.7)

Spread cm3 : 0.7

100 s: (1.1)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 2.00...2.40

2nd speed rpm : 550  
travel mm : 4.00...4.60

3rd speed rpm : 1000  
travel mm : 7.00...7.60

4th speed rpm : 1350  
travel mm : 10.10...10.30

5th speed rpm : 1430  
travel mm : 10.90...11.30

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1500

Rack travel in mm : 6.00...12.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 2400

Del.quantity : 270.0...272.0  
1000 : (267.0...275.0)  
Spread cm3 : 6.00  
1000 : (10.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 118...126

#### Testing:

1st rack travel in: 13.60  
Speed rpm : 1330...1340  
2nd rack travel in: 4.00  
Speed rpm : 1460...1490  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 71...79

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 300  
Rack travel in mm : 5.40...5.60

#### CONSTANT REGULATION

Speed rpm : 300...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 14.60...14.70  
2nd speed rpm : 1200  
Rack travel in m: 14.00...14.30  
3rd speed rpm : 1000  
Rack travel in m: 12.50...13.00  
4th speed rpm : 800  
Rack travel in m: 12.10...12.30

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 1300  
Pressure hPa : 2400  
Rack travel mm : 14.60...14.70

##### Measurement

Speed 1/min : 1300

1st pressure hPa : -  
Rack travel in m: 7.20...7.50  
2nd pressure hPa : 320  
Rack travel in m: 7.40...7.50

F02

3rd pressure hPa : 1230  
Rack travel in m: 11.80...12.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 2400  
Speed rpm : 800  
Del.quantity cm3/ : 251.0...257.0  
1000 s: (248.0...260.0)  
Spread cm3 : 9.00  
1000 s: (13.0)  
Aneroid pressure h: -  
Speed rpm : 800  
Del.quantity cm3/ : 125.0...127.0  
1000 s: (122.0...130.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.60  
Speed rpm : 1330...1340

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.40...5.60

#### Remarks:

:

Start-of-delivery setting with ROBO  
diaphragm.

#### APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 n1  
Edition : 29.11.91  
Replaces : 27.9.91  
Test oil : ISO-4113

Combination no. : 0 402 646 949

Injection pump  
Pump designation : PE6P120A320RS7230Z  
EP type number : 0 412 626 848  
Governor  
Governor design. : RQV250...1000PA990K  
Governor no. : 0 421 815 274

Customer-spec. information  
Customer : DAF

Engine : WS 295 G

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)

Rack travel in mm : 13.20...14.20

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 980

Rack travel in mm : 13.70...13.80

Del.quantity cm3/ : 25.4...25.6

100 s: (25.1...25.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.30...1.70

2nd speed rpm : 285

travel mm : 2.10...2.50

3rd speed rpm : 1030

travel mm : 9.60...10.00

4th speed rpm : 1145

travel mm : 11.20...11.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Aneroid pressure h: 1500

Del.quantity : 254.0...256.0

1000 : (251.0...259.0)

Spread cm3 : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 12.70  
Speed rpm : 1030...1040  
2nd rack travel in: 4.00  
Speed rpm : 1135...1165  
4th rack travel in: 1275  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 67...75

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 250  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 320...360

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 500  
Rack travel in m: 12.20...12.30  
2nd speed rpm : 550  
Rack travel in m: 12.20...12.40  
3rd speed rpm : 725  
Rack travel in m: 12.60...12.80  
4th speed rpm : 850  
Rack travel in m: 13.20...13.40  
5th speed rpm : 980  
Rack travel in m: 14.00...14.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 980  
Pressure hPa : 1500  
Rack travel mm : 13.70...13.80

Measurement  
Speed 1/min : 980

1st pressure hPa : -  
Rack travel in m: 8.10...8.30  
2nd pressure hPa : 430  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 190  
Rack travel in m: 9.10...9.30

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 263.0...267.0  
1000 s: (260.0...270.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 143.0...145.0  
1000 s: (140.0...148.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.70  
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.10...5.30

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 9,6 o 6  
Edition : 29.11.91  
Replaces : 27.9.91  
Test oil : ISO-4113

Combination no. : 0 402 646 954

Injection pump  
Pump designation : PE6P120A320LS7834  
EP type number : 0 412 626 841  
Governor  
Governor design. : RQ300/1050PA993-5  
Governor no. : 0 421 801 610

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.70...13.90

Del.quantity cm<sup>3</sup>/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

# Testing:

1st rack travel in: 13.00  
Speed rpm : 1090...1105  
2nd rack travel in: 4.00  
Speed rpm : 1175...1205  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

## LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

# Testing:

Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 5.90...6.50  
Rack travel in mm : 2.00  
Speed rpm : 380...420

## TORQUE CONTROL

Dimension a mm : ?  
2nd speed rpm : 1050  
Rack travel in m: 14.00...14.20  
3rd speed rpm : 800  
Rack travel in m: 14.10...14.30

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 13.70...13.90

### Measurement

Speed 1/min : 600

1st pressure hPa : 250  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 550  
Rack travel in m: 12.50...12.70  
3rd pressure hPa : 1100  
Rack travel in m: 13.80...14.00 \*  
4th pressure hPa : -  
Rack travel in m: 9.20...9.50

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1500

FO6

Speed rpm : 1050  
Del.quantity cm3/ : 216.0...219.0  
1000 s: (213.0...222.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 800  
Del.quantity cm3/ : 219.0...223.0  
1000 s: (216.0...226.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 122.0...124.0  
1000 s: (119.0...127.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1090...1105

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

### Remarks:

:

\* Increase in control-rod travel with respect to setting at least 0.1 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,1 b 2  
Edition : 29.11.91  
Replaces : 8.10.91  
Test oil : ISO-4113

Combination no. : 0 402 646 956

Injection pump  
Pump designation : PE6P120A320LS7837-1  
EP type number : 0 412 626 858  
Governor  
Governor design. : RQV350...1050PA842-9  
Governor no. : 0 421 813 955

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 250.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.05)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del.quantity cm3/ : 18.4...23.6

100 s: (23.1...23.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 5.1...5.7  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 0.70...1.30  
2nd speed rpm : 470  
travel mm : 2.60...3.10  
3rd speed rpm : 940  
travel mm : 5.20...5.70  
4th speed rpm : 1106  
travel mm : 6.70...7.20  
5th speed rpm : 1263  
travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1185  
Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 600  
Aneroid pressure h: 1000  
Del.quantity : 234.0...236.0  
1000 : (231.0...239.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

### RATED SPEED

#### 1st version

Control Lever  
position degrees: 111...119

#### Testing:

1st rack travel in: 13.50  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control Lever  
position degrees: 63...71

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.10...5.70

### CONSTANT REGULATION

Speed rpm : 350...600

### TORQUE CONTROL

Dimension a mm : 0.60  
2nd speed rpm : 1050  
Rack travel in m: 14.50...14.70  
3rd speed rpm : 950  
Rack travel in m: 14.80...15.00  
4th speed rpm : 800  
Rack travel in m: 15.10...15.30

### Aneroid/Altitude

#### Compensator Test

#### 1st version

##### Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.50...14.70

##### Measurement

Speed 1/min : 600

1st pressure hPa : 200  
Rack travel in m: 9.60...9.80  
2nd pressure hPa : 600

Rack travel in m: 13.30...13.50  
3rd pressure hPa : 1250  
Rack travel in m: 14.60...14.80 \*  
4th pressure hPa : 1400  
Rack travel in m: 15.10...15.30  
5th pressure hPa : -  
Rack travel in m: 8.70...8.90

### START CUT-OUT

Speed 1/min : 270 (290)

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1800  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 234.0...237.0  
1000 s: (231.0...240.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1800  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 247.0...251.0  
1000 s: (244.0...254.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 135.0...137.0  
1000 s: (132.0...140.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.50  
Speed rpm : 1090...1100

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 250.0...270.0  
1000 s: (246.0...274.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 9,6 o 7  
 Edition : 23.10.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 961  
 Injection pump  
 Pump designation : PE6P120A320LS7834-1  
 EP type number : 0 412 626 857  
 Governor  
 Governor design. : RGV350...950PA866-14  
 Governor no. : 0 421 813 959

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 213.0  
 Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
 : (5.45...5.55)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.30...14.50

Del.quantity cm3/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.6...6.2  
 Del.quantity cm3/ : 1.6...2.2  
 100 s: (1.3...2.5)

Spread cm3 : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.30...1.80  
 2nd speed rpm : 424  
 travel mm : 2.30...2.80  
 3rd speed rpm : 700  
 travel mm : 4.10...4.60  
 4th speed rpm : 1008  
 travel mm : 7.90...8.40  
 5th speed rpm : 1220  
 travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 985  
 Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

# 1st version

Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 209.0...211.0  
1000 : (206.0...214.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Control Lever  
position degrees: 111...119

### Testing:

1st rack travel in: 13.80  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1065...1095  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control Lever  
position degrees: 63...71

### Testing:

Speed rpm : 200  
Minimum rack trave: 7.30  
Speed rpm : 350  
Rack travel in mm : 5.10...5.70

## CONSTANT REGULATION

Speed rpm : 350...600

### Aneroid/Altitude

#### Compensator Test

### 1st version

#### Setting

Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.30...13.50

#### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 550  
Rack travel in m: 12.30...12.50  
3rd pressure hPa : 1300  
Rack travel in m: 13.70...13.90  
4th pressure hPa : -  
Rack travel in m: 9.40...9.70

## START CUT-OUT

Speed 1/min : 270 (290)

F10

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1600  
Speed rpm : 950  
Del.quantity cm3/ : 228.0...231.0  
1000 s: (225.0...234.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm3/ : 230.0...234.0  
1000 s: (227.0...237.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 123.0...125.0  
1000 s: (120.0...128.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 13.80  
Speed rpm : 990...1000

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 L3  
Edition : 22.11.91  
Replaces : 27.9.91  
Test oil : ISO-4113

Combination no. : 0 402 646 963

Injection pump  
Pump designation : PE6P120A32ORS7218Y  
EP type number : 0 412 626 859  
Governor  
Governor design. : RQ250/1000PA936-1  
Governor no. : 0 421 801 508

Customer-spec. information  
Customer : DAF

Engine : WS 242 G

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40  
: (5.25...5.45)

Rack travel in mm : 13.70...14.70

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 14.5...15.5  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.20...14.30

Del.quantity cm<sup>3</sup>/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.0

Del.quantity cm<sup>3</sup>/ : 2.4...3.0

100 s: (2.1...3.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.80...17.00

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 211.0...213.0

1000 : (208.0...216.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

### 1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.4

### Testing:

1st rack travel in: 13.20  
Speed rpm : 1035...1050  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.0

### Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 250  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 310...350

### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 15.30...15.40  
2nd speed rpm : 1000  
Rack travel in m: 15.20...15.40

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.20...14.30

### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 480  
Rack travel in m: 13.80...13.90  
3rd pressure hPa : 330  
Rack travel in m: 12.80...13.00

### FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 159.0...161.0  
1000 s: (156.0...164.0)

### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.20  
Speed rpm : 1035...1050

### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.90...5.10

### Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 L7  
 Edition : 22.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 963  
 Injection pump  
 Pump designation : PE6P120A320RS7218Y  
 EP type number : 0 412 626 859  
 Governor  
 Governor design. : RQ250/1000PA936-1  
 Governor no. : 0 421 801 508

Cust. part no. : T3

Customer-spec. information  
 Customer : DAF

Engine : WS 242 G

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40  
 : (5.25...5.45)  
 Rack travel in mm : 13.70...14.70  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.20...14.30

Del.quantity cm<sup>3</sup>/ : 21.3...21.5

100 s: (21.0...21.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 6.6...7.0  
 Del.quantity cm<sup>3</sup>/ : 1.4...2.0  
 100 s: (1.1...2.3)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.80...17.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 213.0...215.0

1000 : (210.0...218.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16.4

Testing:

1st rack travel in: 13.20

Speed rpm : 1035...1050  
2nd rack travel in: 4.00  
Speed rpm : 1140...1170  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 250  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 310...350

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 850  
Rack travel in m: 15.30...15.40  
2nd speed rpm : 1000  
Rack travel in m: 15.20...15.40

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.20...14.30

##### Measurement

Speed 1/min : 600

#### 1st pressure hPa : -

Rack travel in m: 12.40...12.60

#### 2nd pressure hPa : 480

Rack travel in m: 13.80...13.90

#### 3rd pressure hPa : 330

Rack travel in m: 12.80...13.00

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

##### Aneroid pressure h: -

Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 167.0...169.0  
1000 s: (164.0...172.0)

#### BREAKAWAY

#### 1st version

F14

1mm rack travel less than

full load rack tr: 13.20

Speed rpm : 1035...1050

#### LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.90...5.10

#### Remarks:

:  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 L4  
Edition : 22.11.91  
Replaces : 27.9.91  
Test oil : ISO-4113

Combination no. : 0 402 646 964

Injection pump  
Pump designation : PE6P120A32ORS7218Y  
EP type number : 0 412 626 859  
Governor  
Governor design. : RQV250...1000PA939  
Governor no. : 0 421 813 829

Customer-spec. information  
Customer : DAF

Engine : WS 242 G

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40  
: (5.25...5.45)

Rack travel in mm : 13.70...14.70

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
& maximum rack tra: 14.5...15.5  
Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.0

Del.quantity cm3/ : 2.4...3.0

100 s: (2.1...3.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
travel mm : 7.80...8.00

2nd speed rpm : 250  
travel mm : 0.70...1.10

3rd speed rpm : 400  
travel mm : 2.50...3.10

4th speed rpm : 700  
travel mm : 4.50...4.90

5th speed rpm : 1350  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 850  
Aneroid pressure h: 1000  
Del.quantity : 211.0...213.0  
1000 : (208.0...216.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 13.20  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

LOW IDLE 1  
Control lever  
position degrees: 77...85

Testing:  
Speed rpm : 100  
Minimum rack trave: 6.50  
Speed rpm : 250  
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION  
Speed rpm : 270...380

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.20...14.30

Measurement  
Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 480  
Rack travel in m: 13.80...13.90  
3rd pressure hPa : 330  
Rack travel in m: 12.80...13.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -

Speed rpm : 600  
Del.quantity cm3/ : 159.0...161.0  
1000 s: (156.0...164.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.20  
Speed rpm : 1040...1050

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,7 L8  
 Edition : 22.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 964  
 Injection pump  
 Pump designation : PE6P120A32ORS7218Y  
 EP type number : 0 412 626 859  
 Governor  
 Governor design. : RQV250...1000PA939  
 Governor no. : 0 421 813 829

Cust. part no. : T3

Customer-spec. information  
 Customer : DAF

Engine : WS 242 G

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40  
 : (5.25...5.45)  
 Rack travel in mm : 13.70...14.70  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10  
 & maximum rack tra: 14.5...15.5  
 Difference ° CS : 2.25...3.75

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 14.20...14.30

Del.quantity cm3/ : 21.3...21.5

100 s: (21.0...21.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.6...7.0

Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
 travel mm : 7.80...8.00

2nd speed rpm : 250  
 travel mm : 0.70...1.10

3rd speed rpm : 400  
 travel mm : 2.50...3.10

4th speed rpm : 700  
 travel mm : 4.50...4.90

5th speed rpm : 1350  
 travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.20...17.80

#### FULL LOAD DELIV. AT FULL LOAD STOP

##### 1st version

Speed rpm : 850  
Aneroid pressure h: 1000  
Del.quantity : 213.0...215.0  
1000 : (210.0...218.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

##### 1st version

Control lever  
position degrees: 117...125

##### Testing:

1st rack travel in: 13.20  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1250  
Speed rpm : 0.00...1.40

#### LOW IDLE 1

Control lever  
position degrees: 77...85

##### Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 250  
Rack travel in mm : 4.90...5.10

#### CONSTANT REGULATION

Speed rpm : 270...380

#### Aneroid/Altitude

##### Compensator Test

##### 1st version

##### Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.20...14.30

##### Measurement

Speed 1/min : 600

##### 1st pressure hPa : -

Rack travel in m: 12.40...12.60

##### 2nd pressure hPa : 480

Rack travel in m: 13.80...13.90

##### 3rd pressure hPa : 330

Rack travel in m: 12.80...13.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: -

Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 167.0...169.0  
1000 s: (164.0...172.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 13.20

Speed rpm : 1040...1050

#### LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.90...5.10

##### Remarks:

:  
Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a40  
Edition : 24.04.91  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 817

Injection pump  
Pump designation : PE8P120A320LS7801  
EP type number : 0 412 628 806  
Governor  
Governor design. : RQ300/1050PA762-5  
Governor no. : 0 421 801 399

Cust. part no. : T3

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 260.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del.quantity cm<sup>3</sup>/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 650

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.00)

## RATED SPEED

## 1st version

### Setting point:

Speed rpm : 600  
Rack travel in mm : 20.0

### Testing:

1st rack travel in: 11.70  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

### Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.00...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

### TORQUE CONTROL

Dimension a mm : 0.75  
2nd speed rpm : 1050  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 850  
Rack travel in m: 13.70...14.00  
4th speed rpm : 700  
Rack travel in m: 14.40...14.60

### Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.00...14.20

### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.30...12.50  
2nd pressure hPa : 400  
Rack travel in m: 13.30...13.60  
3rd pressure hPa : 850  
Rack travel in m: 14.10...14.20 \*  
4th pressure hPa : -  
Rack travel in m: 11.40...11.70

### START CUT-OUT

F20

Speed 1/min : 220 (240)

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1050  
Speed rpm : 1050  
Del.quantity cm3/ : 180.0...183.0  
1000 s: (177.0...186.0)  
Spread cm3 : 7.00  
1000 s: (10.0)  
Aneroid pressure h: 1050  
Speed rpm : 700  
Del.quantity cm3/ : 215.0...219.0  
1000 s: (212.0...222.0)  
Spread cm3 : 7.00  
1000 s: (10.0)  
Aneroid pressure h: 1050  
Speed rpm : 850  
Del.quantity cm3/ : 206.0...210.0  
1000 s: (203.0...213.0)  
Spread cm3 : 7.00  
1000 s: (10.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 149.0...151.0  
1000 s: (146.0...154.0)  
Spread cm3 : 7.00  
1000 s: (10.0)

### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.70  
Speed rpm : 1095...1110

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 175.0...190.0  
1000 s: (171.0...194.0)

\* Increase in control-rod travel with respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 e 2  
Edition : 22.11.91  
Replaces : 31.7.90  
Test oil : ISO-4113

Combination no. : 0 402 648 831

Injection pump  
Pump designation : PE8P120A320LS7801-1  
EP type number : 0 412 628 818  
Governor  
Governor design. : RQV350...1050PA842-7  
Governor no. : 0 421 813 874

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
(5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del.quantity cm<sup>3</sup>/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 0.80...1.20

2nd speed rpm : 510  
travel mm : 3.60...4.10

3rd speed rpm : 1100  
travel mm : 7.80...8.40

4th speed rpm : 1270  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 16.50...18.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 750  
Del.quantity : 212.0...214.0  
1000 : (209.0...217.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 64...72

#### Testing:

1st rack travel in: 14.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.40  
Speed rpm : 350  
Rack travel in mm : 5.50...6.10

#### CONSTANT REGULATION

Speed rpm : 350...550

#### TORQUE CONTROL

Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 975  
Rack travel in m: 15.60...15.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 750  
Rack travel mm : 14.50...14.70

#### Measurement

Speed 1/min : 600

1st pressure hPa : 400  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 550  
Rack travel in m: 13.60...13.80  
3rd pressure hPa : 900  
Rack travel in m: 14.70...14.80

4th pressure hPa : 1250  
Rack travel in m: 15.50...15.70  
5th pressure hPa : -  
Rack travel in m: 11.60...11.80

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1250  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 221.0...224.0  
1000 s: (218.0...227.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1250  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 233.0...237.0  
1000 s: (230.0...240.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1250  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 154.0...157.0 \*  
1000 s: (151.0...160.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 147.0...149.0  
1000 s: (144.0...152.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 14.20  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

\* = Set at reduced-delivery stop.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 e 3  
Edition : 22.11.91  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 831

Injection pump  
Pump designation : PE8P120A320LS7801-1  
EP type number : 0 412 628 818  
Governor  
Governor design. : RQV350...1050PA842-7  
Governor no. : 0 421 813 874

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del.quantity cm3/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 5.7...5.9  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 0.80...1.20  
2nd speed rpm : 510  
travel mm : 3.60...4.10  
3rd speed rpm : 1100  
travel mm : 7.80...8.40  
4th speed rpm : 1270  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1125  
Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 750  
Del.quantity : 212.0...214.0  
1000 : (209.0...217.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control Lever  
position degrees: 64...72

#### Testing:

1st rack travel in: 14.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control Lever  
position degrees: 8...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.40  
Speed rpm : 350  
Rack travel in mm : 5.50...6.10

#### CONSTANT REGULATION

Speed rpm : 350...550

#### TORQUE CONTROL

Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 975  
Rack travel in m: 15.60...15.80

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 750  
Rack travel mm : 14.50...14.70

#### Measurement

Speed 1/min : 600

1st pressure hPa : 400  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 550  
Rack travel in m: 13.60...13.80  
3rd pressure hPa : 900  
Rack travel in m: 14.70...14.80

4th pressure hPa : 1250  
Rack travel in m: 15.50...15.70  
5th pressure hPa : -  
Rack travel in m: 11.40...11.70

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1250  
Speed rpm : 1050  
Del.quantity cm3/ : 227.0...230.0  
1000 s: (224.0...233.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1250  
Speed rpm : 900  
Del.quantity cm3/ : 238.0...242.0  
1000 s: (235.0...245.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1250  
Speed rpm : 1050  
Del.quantity cm3/ : 156.0...159.0 \*  
1000 s: (153.0...162.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 150.0...152.0  
1000 s: (147.0...155.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 14.20  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

:

\* = Set at reduced-delivery stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 14,2 o  
Edition : 22.11.91  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 891

Injection pump  
Pump designation : PE8P120A920/4LS7189Q  
EP type number : 0 412 628 858  
Governor  
Governor design. : RQV200...950PA736-8  
Governor no. : 0 421 813 815

Customer-spec. information  
Customer : SCANIA

Engine : DSC14 08

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 104

Opening  
pressure, bar : 250...253

Orifice plate  
diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-  
6- 8

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del.quantity cm3/ : 21.9...22.1

100 s: (21.6...22.4)

Spread cm3 : 0.7

100 s: (1.0)

2nd speed rpm : 250.0  
Rack travel in mm : 4.4...4.8  
Del.quantity cm3/ : 1.2...1.6

100 s: (-)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.40...1.80

2nd speed rpm : 350  
travel mm : 2.30...2.90

3rd speed rpm : 650  
travel mm : 4.40...5.00

4th speed rpm : 995  
travel mm : 7.70...7.90

5th speed rpm : 1115  
travel mm : 9.20...9.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 7.00...12.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 219.0...221.0

1000 : (216.0...224.0)

Spread cm<sup>3</sup> : 7.00  
1000 : (10.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 90...98

Testing:  
1st rack travel in: 11.30  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 40...48

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.00  
Speed rpm : 250  
Rack travel in mm : 4.40...4.60  
Rack travel in mm : 2.00  
Speed rpm : 375...435

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...10.20  
2nd pressure hPa : 525  
Rack travel in m: 11.70...11.80  
3rd pressure hPa : 320  
Rack travel in m: 10.40...10.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 202.0...210.0  
1000 s: (200.0...212.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 142.0...146.0  
1000 s: (140.0...148.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 990...1000

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...180.0  
1000 s: (-)  
Rack travel in mm : 9.80...10.20

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 4.40...4.60

#### Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO  
diaphragm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 v  
Edition : 23.10.91  
Replaces : 21.8.91  
Test oil : ISO-4113

Combination no. : 0 402 648 902

Injection pump  
Pump designation : PE8P120A320LS7839  
EP type number : 0 412 628 849  
Governor  
Governor design. : RQ300/1050PA972-5  
Governor no. : 0 421 801 564

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 15.10...15.30

Del.quantity cm3/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 6.2...6.8  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 1050  
Del.quantity : 256.0...258.0  
1000 : (253.0...261.0)  
Spread cm3 : 6.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:  
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.20  
Speed rpm : 1090...1105  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.20...6.80  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?  
2nd speed rpm : 1050  
Rack travel in m: 16.20...16.40  
3rd speed rpm : 800  
Rack travel in m: 16.30...16.50

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 1050  
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 800  
Rack travel in m: 13.70...13.90  
3rd pressure hPa : 1300  
Rack travel in m: 14.80...15.00  
4th pressure hPa : 1600  
Rack travel in m: 15.40...15.60  
5th pressure hPa : -  
Rack travel in m: 9.30...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1900  
Speed rpm : 1050

Del.quantity cm3/ : 271.0...274.0  
1000 s: (268.0...277.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1900  
Speed rpm : 800  
Del.quantity cm3/ : 276.0...280.0  
1000 s: (273.0...283.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 136.0...138.0  
1000 s: (133.0...141.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.20  
Speed rpm : 1090...1105

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a39  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 903  
 Injection pump  
 Pump designation : PE8P120A320LS7801-1  
 EP type number : 0 412 628 818  
 Governor  
 Governor design. : RQV350...1050PA866  
 -12  
 Governor no. : 0 421 813 947

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 260.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 13.90...14.10

Del.quantity cm3/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.0...5.5  
 Del.quantity cm3/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm3 : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.30...1.80  
 2nd speed rpm : 570  
 travel mm : 3.30...3.80  
 3rd speed rpm : 900  
 travel mm : 5.40...5.90  
 4th speed rpm : 1107  
 travel mm : 7.80...8.30  
 5th speed rpm : 1204  
 travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1130  
 Rack travel in mm : 16.50...18.00

# FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 500  
 Aneroid pressure h: 650  
 Del.quantity : 201.0...203.0  
     1000 : (198.0...206.0)  
 Spread cm3 : 5.00  
     1000 : (9.00)

## RATED SPEED

## 1st version

Control Lever  
 position degrees: 117...125

## Testing:

1st rack travel in: 11.50  
     Speed rpm : 1090...1100  
 2nd rack travel in: 4.00  
     Speed rpm : 1160...1190  
 4th rack travel in: 1300  
     Speed rpm : 0.00...1.00

## LOW IDLE 1

Control Lever  
 position degrees: 65...73

## Testing:

Speed rpm : 250  
 Minimum rack trave: 7.60  
 Speed rpm : 350  
 Rack travel in mm : 5.00...5.50

## CONSTANT REGULATION

Speed rpm : 350...550

## TORQUE CONTROL

Dimension a mm : 1.60  
 2nd speed rpm : 1050  
     Rack travel in m: 12.50...12.70  
 3rd speed rpm : 700  
     Rack travel in m: 14.10...14.30

## Aneroid/Altitude

## Compensator Test

## 1st version

## Setting

Speed rpm : 600  
 Pressure hPa : 650  
 Rack travel mm : 13.90...14.10

## Measurement

Speed 1/min : 600

1st pressure hPa : 300  
     Rack travel in m: 12.20...12.40  
 2nd pressure hPa : 375

Rack travel in m: 13.30...13.50  
 3rd pressure hPa : 900  
 Rack travel in m: 14.00...14.20  
 4th pressure hPa : -  
 Rack travel in m: 10.90...11.20

## START CUT-OUT

Speed 1/min : 270 (290)

## FUEL DELIVERY CHARACTERISTICS

## 1st version

Aneroid pressure h: 1100  
 Speed rpm : 1050  
 Del.quantity cm3/ : 180.0...183.0  
     1000 s: (177.0...186.0)  
 Spread cm3 : 8.00  
     1000 s: (12.0)  
 Aneroid pressure h: 1100  
 Speed rpm : 700  
 Del.quantity cm3/ : 213.0...217.0  
     1000 s: (210.0...220.0)  
 Aneroid pressure h: -  
 Speed rpm : 500  
 Del.quantity cm3/ : 147.0...149.0  
     1000 s: (144.0...152.0)  
 Spread cm3 : 8.00  
     1000 s: (12.0)

## BREAKAWAY

## 1st version

1mm rack travel less than

full load rack tr: 11.50  
 Speed rpm : 1090...1100

## STARTING FUEL DELIVERY

Speed rpm : 100  
 Del.quantity cm3/ : 180.0...200.0  
     1000 s: (176.0...204.0)

## Remarks:

:

\* Increase in control-rod travel with  
 respect to setting at least 0.1 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 w  
Edition : 29.11.91  
Replaces : 26.4.91  
Test oil : ISO-4113

Combination no. : 0 402 648 906

Injection pump  
Pump designation : PE8P120A320LS7838  
EP type number : 0 412 628 848  
Governor  
Governor design. : RQ300/1050PA972-6  
Governor no. : 0 421 801 569

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 320.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00x2.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/ : 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.8

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

1000 : (226.0...234.0)

Spread cm3 : 6.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.50

Speed rpm : 1090...1105

2nd rack travel in: 4.00

Speed rpm : 1165...1195

4th rack travel in: 1250

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

Testing:

Speed rpm : 200

Minimum rack travel: 7.80

Speed rpm : 300

Rack travel in mm : 6.20...6.80

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : ?

2nd speed rpm : 1050

Rack travel in m: 14.50...14.70

3rd speed rpm : 800

Rack travel in m: 15.00...15.20

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 1000

Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 350

Rack travel in m: 10.00...10.20

2nd pressure hPa : 700

Rack travel in m: 13.00...13.20

3rd pressure hPa : 1200

Rack travel in m: 14.30...14.50

4th pressure hPa : 1350

Rack travel in m: 14.70...14.90

5th pressure hPa : -

Rack travel in m: 9.20...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600

Speed rpm : 1050

Del.quantity cm3/ : 226.0...229.0

1000 s: (223.0...232.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1600

Speed rpm : 800

Del.quantity cm3/ : 239.0...243.0

1000 s: (236.0...246.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 138.0...140.0

1000 s: (135.0...143.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50

Speed rpm : 1090...1105

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 v 1  
Edition : 29.11.91  
Replaces : 27.5.91  
Test oil : ISO-4113

Combination no. : 0 402 648 907

Injection pump  
Pump designation : PE8P120A320LS7839  
EP type number : 0 412 628 849  
Governor  
Governor design. : RQV300...950PA797-22  
Governor no. : 0 421 813 909

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
                  : (4.95...5.15)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 15.10...15.30

Del.quantity cm<sup>3</sup>/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 5.2...5.8  
Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm<sup>3</sup> : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.00...1.50  
2nd speed rpm : 617  
travel mm : 5.00...5.50  
3rd speed rpm : 780  
travel mm : 6.10...6.60  
4th speed rpm : 1010  
travel mm : 8.30...8.80  
5th speed rpm : 1092  
travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1020  
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 1050  
Del.quantity : 256.0...258.0  
1000 : (253.0...261.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 118...126

Testing:

1st rack travel in: 15.00  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1080...1110  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 82...90

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.90...6.50

CONSTANT REGULATION

Speed rpm : 300...500

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 1050  
Rack travel mm : 15.10...15.30

Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 10.20...10.40  
2nd pressure hPa : 800  
Rack travel in m: 13.90...14.10  
3rd pressure hPa : 1300  
Rack travel in m: 15.30...15.50  
4th pressure hPa : 1600  
Rack travel in m: 15.90...16.10  
5th pressure hPa : -  
Rack travel in m: 9.10...9.40

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1900  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 279.0...282.0  
1000 s: (276.0...285.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 144.0...146.0  
1000 s: (141.0...149.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.00  
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 275.0...295.0  
1000 s: (271.0...299.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 u 2  
Edition : 29.11.91  
Replaces : 30.8.91  
Test oil : ISO-4113  
  
Combination no. : 0 402 648 909  
  
Injection pump  
Pump designation : PE8P120A320LS7840  
EP type number : 0 412 628 850  
Governor  
Governor design. : RQ300/950PA971-6  
Governor no. : 0 421 801 575

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.50...13.70

Del.quantity cm3/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 7.0...7.4  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm3 : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 209.0...211.0  
1000 : (206.0...214.0)  
Spread cm3 : 6.00  
1000 : (9.00)

## RATED SPEED

1st version

Setting point:  
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.30

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1070...1100

4th rack travel in: 1150

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.5

Testing:

Speed rpm : 200

Minimum rack travel: 7.60

Speed rpm : 300

Rack travel in mm : 6.20...6.80

Rack travel in mm : 2.00

Speed rpm : 380...420

TORQUE CONTROL

2nd speed rpm : 950

Rack travel in m: 13.30...13.50

3rd speed rpm : 800

Rack travel in m: 13.90...14.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 900

Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 345

Rack travel in m: 11.60...11.80

2nd pressure hPa : 600

Rack travel in m: 13.00...13.20

3rd pressure hPa : 1050

Rack travel in m: 13.70...13.90 \*

4th pressure hPa : 1250

Rack travel in m: 14.00...14.20

5th pressure hPa : -

Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 950

Del.quantity cm3/ : 204.0...207.0

1000 s: (201.0...210.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 1500

Speed rpm : 800

Del.quantity cm3/ : 220.0...224.0

1000 s: (217.0...227.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 127.0...129.0

1000 s: (124.0...132.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.30

Speed rpm : 990...1005

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 u 3  
Edition : 29.11.91  
Replaces : 18.9.91  
Test oil : ISO-4113

Combination no. : 0 402 648 910

Injection pump  
Pump designation : PE8P120A320LS7840  
EP type number : 0 412 628 850  
Governor  
Governor design. : RQV300...950PA797-26  
Governor no. : 0 421 813 915

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.50...13.70

Del.quantity cm<sup>3</sup>/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 6.9...7.5  
Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm<sup>3</sup> : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.00...1.50  
2nd speed rpm : 617  
travel mm : 5.00...5.50  
3rd speed rpm : 780  
travel mm : 6.10...6.60  
4th speed rpm : 1009  
travel mm : 8.30...8.80  
5th speed rpm : 1092  
travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1020  
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 206.0...208.0  
1000 : (203.0...211.0)  
Spread cm3 : 6.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 118...126

Testing:

1st rack travel in: 12.40  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 82...90

Testing:

Speed rpm : 200  
Minimum rack trave: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.90...7.50

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

2nd speed rpm : 950  
Rack travel in m: 13.40...13.60  
3rd speed rpm : 800  
Rack travel in m: 14.00...14.20

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.50...13.70

Measurement

Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 11.30...11.50  
2nd pressure hPa : 650  
Rack travel in m: 12.80...13.00  
3rd pressure hPa : 1050

Rack travel in m: 13.60...13.70 \*  
4th pressure hPa : 1250  
Rack travel in m: 13.90...14.10  
5th pressure hPa : -  
Rack travel in m: 10.70...11.00

START CUT-OUT

Speed 1/min : 240 (260)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500  
Speed rpm : 950  
Del.quantity cm3/ : 204.0...207.0  
1000 s: (201.0...210.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 800  
Del.quantity cm3/ : 220.0...224.0  
1000 s: (217.0...227.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 123.0...125.0  
1000 s: (120.0...128.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.40  
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...230.0  
1000 s: (206.0...234.0)

Remarks:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 y  
Edition : 29.11.91  
Replaces : 21.8.91  
Test oil : ISO-4113

Combination no. : 0 402 648 920

Injection pump  
Pump designation : PE8P120A320LS7844  
EP type number : 0 412 628 860  
Governor  
Governor design. : RQV350...1050PA870  
-16  
Governor no. : 0 421 813 953

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.40...14.60

Del.quantity cm3/ : 25.2...25.4

100 s: (24.9...25.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 4.8...5.4  
Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)

Spread cm3 : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.30...1.80  
2nd speed rpm : 570  
travel mm : 3.30...3.80  
3rd speed rpm : 900  
travel mm : 5.40...5.90  
4th speed rpm : 1108  
travel mm : 7.80...8.30  
5th speed rpm : 1204  
travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1125  
Rack travel in mm : 16.50...18.00

# FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 600~  
Aneroid pressure h: 1000  
Del.quantity : 252.0...254.0  
1000 : (249.0...257.0)  
Spread cm3 : 5.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Control lever  
position degrees: 115...123

### Testing:

1st rack travel in: 14.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 63...71

### Testing:

Speed rpm : 250  
Minimum rack trave: 6.60  
Speed rpm : 350  
Rack travel in mm : 5.00...5.60

## CONSTANT REGULATION

Speed rpm : 350...550

## TORQUE CONTROL

Dimension a mm : 0.80  
2nd speed rpm : 1050  
Rack travel in m: 15.40...15.60  
3rd speed rpm : 800  
Rack travel in m: 16.20...16.40

## Aneroid/Altitude Compensator Test

### 1st version

#### Setting

Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.40...14.60

#### Measurement

Speed 1/min : 600

1st pressure hPa : 290  
Rack travel in m: 9.10...9.30  
2nd pressure hPa : 780

G12

Rack travel in m: 13.50...13.70  
3rd pressure hPa : 1200  
Rack travel in m: 14.50...14.70 \*  
4th pressure hPa : -  
Rack travel in m: 8.80...9.10

## START CUT-OUT

Speed 1/min : 270 (290)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1900  
Speed rpm : 1050  
Del.quantity cm3/ : 274.0...277.0  
1000 s: (271.0...280.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1900  
Speed rpm : 800  
Del.quantity cm3/ : 295.0...299.0  
1000 s: (292.0...302.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 139.0...141.0  
1000 s: (136.0...144.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 14.40  
Speed rpm : 1090...1100

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 280.0...300.0  
1000 s: (276.0...304.0)

## Remarks:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 v 5  
Edition : 23.10.91  
Replaces : 30.8.91  
Test oil : ISO-4113

Combination no. : 0 402 648 921

Injection pump  
Pump designation : PE8P120A320LS7839  
EP type number : 0 412 628 849  
Governor  
Governor design. : RQ300/950PA993-8  
Governor no. : 0 421 801 618

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 370.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10  
: (4.95...5.15)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 15.00...15.20

Del.quantity cm<sup>3</sup>/ : 25.6...25.8

100 s: (25.3...26.1)

Spread cm<sup>3</sup> : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.6

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1050

Del.quantity : 256.0...258.0

1000 : (253.0...261.0)

Spread cm<sup>3</sup> : 6.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 15.40

Speed rpm : 990...1005

2nd rack travel in: 4.00

Speed rpm : 1075...1105

4th rack travel in: 1150

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.3

Testing:

Speed rpm : 200

Minimum rack travel: 7.60

Speed rpm : 300

Rack travel in mm : 6.00...6.60

Rack travel in mm : 2.00

Speed rpm : 380...420

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600

Pressure hPa : 1050

Rack travel mm : 15.00...15.20

Measurement

Speed 1/min : 600

1st pressure hPa : 350

Rack travel in m: 10.00...10.20

2nd pressure hPa : 800

Rack travel in m: 13.80...14.00

3rd pressure hPa : 1300

Rack travel in m: 15.20...15.40

4th pressure hPa : 1600

Rack travel in m: 15.80...16.00

5th pressure hPa : -

Rack travel in m: 9.30...9.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 2100

Speed rpm : 950

Del.quantity cm3/ : 279.0...282.0

1000 s: (276.0...285.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: 2100

Speed rpm : 800

Del.quantity cm3/ : 286.0...290.0

1000 s: (283.0...293.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 136.0...138.0

1000 s: (133.0...141.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15.40

Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 260.0...280.0

1000 s: (256.0...284.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 12,8 p  
Edition : 29.11.91  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 922

Injection pump  
Pump designation : PE8P120A320LS7845  
EP type number : 0 412 628 861  
Governor  
Governor design. : RQV350...1050PA866  
-15  
Governor no. : 0 421 813 960

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM402 A

1st version kW : 280.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.30...14.50

Del.quantity cm3/ : 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.8...5.4

Del.quantity cm3/ : 1.6...2.2  
100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.30...1.80

2nd speed rpm : 570  
travel mm : 3.30...3.80

3rd speed rpm : 900  
travel mm : 5.40...5.90

4th speed rpm : 1107  
travel mm : 7.80...8.30

5th speed rpm : 1204  
travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 16.50...18.00

# FULL LOAD DELIV. AT FULL LOAD STOP

## 1st version

Speed rpm : 600  
Aneroid pressure h: 900  
Del.quantity : 225.0...227.0  
1000 : (222.0...230.0)  
Spread cm3 : 6.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Control lever  
position degrees: 118...126

### Testing:

1st rack travel in: 12.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 62...70

### Testing:

Speed rpm : 200  
Minimum rack trave: 7.40  
Speed rpm : 350  
Rack travel in mm : 4.80...5.40

## CONSTANT REGULATION

Speed rpm : 350...550

## TORQUE CONTROL

Dimension a mm : 0.20  
2nd speed rpm : 1050  
Rack travel in m: 13.80...14.00  
3rd speed rpm : 800  
Rack travel in m: 14.40...14.60

Aneroid/Altitude  
Compensator Test

### 1st version

#### Setting

Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 14.30...14.50

#### Measurement

Speed 1/min : 600

1st pressure hPa : 250  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 600

Rack travel in m: 13.00...13.20  
3rd pressure hPa : 1100  
Rack travel in m: 14.40...14.50 \*  
4th pressure hPa : -  
Rack travel in m: 9.00...9.30

## START CUT-OUT

Speed 1/min : 270 (290)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1500  
Speed rpm : 1050  
Del.quantity cm3/ : 214.0...217.0  
1000 s: (211.0...220.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1500  
Speed rpm : 800  
Del.quantity cm3/ : 232.0...236.0  
1000 s: (229.0...239.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 122.0...124.0  
1000 s: (119.0...127.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 1090...1100

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 230.0...250.0  
1000 s: (226.0...254.0)

Remarks:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 z  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 648 923  
 Injection pump  
 Pump designation : PE8P120A320LS7840-1  
 EP type number : 0 412 628 862  
 Governor  
 Governor design. : RQV350...1050PA866  
 -16  
 Governor no. : 0 421 813 961

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0  
 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 105

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.70...13.90

Del.quantity cm3/ : 20.8...21.0

100 s: (20.5...21.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.8

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
 travel mm : 1.30...1.80

2nd speed rpm : 454  
 travel mm : 2.80...3.30

3rd speed rpm : 900  
 travel mm : 5.40...5.90

4th speed rpm : 1107  
 travel mm : 7.80...8.30

5th speed rpm : 1204  
 travel mm : 9.80...10.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 600  
Aneroid pressure h: 800  
Del.quantity : 208.0...210.0  
1000 : (205.0...213.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

## RATED SPEED

### 1st version

Control lever  
position degrees: 118...126

### Testing:

1st rack travel in: 12.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 82...90

### Testing:

Speed rpm : 250  
Minimum rack travel: 7.60  
Speed rpm : 350  
Rack travel in mm : 6.20...6.80

## CONSTANT REGULATION

Speed rpm : 350...500

## TORQUE CONTROL

Dimension a mm : 1.40  
2nd speed rpm : 1050  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 800  
Rack travel in m: 14.60...14.80

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 13.70...13.90

## Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.40...11.60  
2nd pressure hPa : 550

Rack travel in m: 12.50...12.70  
3rd pressure hPa : 1050  
Rack travel in m: 13.80...13.90 \*  
4th pressure hPa : 1150  
Rack travel in m: 14.20...14.50  
5th pressure hPa : -  
Rack travel in m: 10.80...11.10

## START CUT-OUT

Speed 1/min : 270 (290)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 1400  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 194.0...197.0  
1000 s: (191.0...200.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 236.0...240.0  
1000 s: (233.0...243.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 123.0...125.0  
1000 s: (120.0...128.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1090...1100

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 195.0...215.0  
1000 s: (191.0...219.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 e 1  
Edition : 29.11.91  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 924

Injection pump  
Pump designation : PE8P120A320LS7840-1  
EP type number : 0 412 628 862  
Governor  
Governor design. : RQV350...950PA866-17  
Governor no. : 0 421 813 962

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 250.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
(5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.40...13.60

Del.quantity cm3/ : 20.8...21.0

100 s: (20.5...21.3)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...6.1

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.30...1.80

2nd speed rpm : 424  
travel mm : 2.30...2.80

3rd speed rpm : 700  
travel mm : 4.10...4.60

4th speed rpm : 1008  
travel mm : 7.80...8.30

5th speed rpm : 1220  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 800  
Del.quantity : 208.0...210.0  
1000 : (205.0...213.0)  
Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 118...126

Testing:

1st rack travel in: 11.80  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 82...90

Testing:

Speed rpm : 200  
Minimum rack trave: 7.10  
Speed rpm : 350  
Rack travel in mm : 5.50...6.10

CONSTANT REGULATION

Speed rpm : 350...550

TORQUE CONTROL

Dimension a mm : 1.50  
2nd speed rpm : 950  
Rack travel in m: 12.80...13.00  
3rd speed rpm : 800  
Rack travel in m: 14.30...14.50

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.40...13.60

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 550  
Rack travel in m: 12.20...12.40

3rd pressure hPa : 1050  
Rack travel in m: 13.50...13.60 \*  
4th pressure hPa : 1150  
Rack travel in m: 13.90...14.20  
5th pressure hPa : -  
Rack travel in m: 10.50...10.80

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 950  
Del.quantity cm<sup>3</sup>/ : 194.0...197.0  
1000 s: (191.0...200.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.)  
Aneroid pressure h: 1400  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 236.0...240.0  
1000 s: (233.0...243.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 123.0...125.0  
1000 s: (120.0...128.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 195.0...215.0  
1000 s: (191.0...219.0)

Remarks:

\* Increase in control-rod travel with  
respect to setting at least 0.1 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 g  
Edition : 29.11.91  
Replaces : 19.6.90  
Test oil : ISO-4113

Combination no. : 0 402 678 802

Injection pump  
Pump designation : PE8P120A320LS7801-1  
EP type number : 0 412 628 818  
Governor  
Governor design. : RSV650...1050POA826  
Governor no. : 0 421 833 253

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442A

1st version kW : 234.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1080  
Rack travel in mm : 11.60...11.70  
Del.quantity cm3/ : 16.3...16.5  
                  100 s: (16.0...16.8)  
Spread cm3 : 0.5  
                  100 s: (0.9)  
2nd speed rpm : 650.0  
Rack travel in mm : 4.1...4.3  
Del.quantity cm3/ : 1.6...2.2  
                  100 s: (1.3...2.5)  
Spread cm3 : 0.8  
                  100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1080  
Del.quantity : 163.0...165.0  
                  1000 : (160.0...168.0)  
Spread cm3 : 5.00  
                  1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 34...42

Testing:

1st rack travel in: 10.60  
Speed rpm : 1110...1120  
2nd rack travel in: 4.00  
Speed rpm : 1135...1150  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 4.2

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 650  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 650...710

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1080  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 900  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 1000  
Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 201.0...206.0  
1000 s: (198.0...209.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min.

In order to adjust and test the EP combination, set full-load speed regul. at 1110...1120 1/min. Then set speed regul. to 1060...1070 1/min again.

APPLICATION

Observe VDT-I-420/120

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 g15  
Edition : 29.11.91  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 678 802

Injection pump  
Pump designation : PE8P120A320LS7801-1  
EP type number : 0 412 628 818  
Governor  
Governor design. : RSV650...1050POA826  
Governor no. : 0 421 833 253

Cust. part no. : T3

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM442A

1st version kW : 234.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
: (5.15...5.35)

Rack travel in mm : 9.00...12.00

Firing order : 8- 7- 2- 6- 3- 5-  
4- 1

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1080

Rack travel in mm : 11.60...11.70

Del.quantity cm<sup>3</sup>/ : 16.3...16.5

100 s: (16.0...16.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 650.0

Rack travel in mm : 4.1...4.3

Del.quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del.quantity : 163.0...165.0

1000 : (160.0...168.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control Lever  
position degrees: 34...42

### Testing:

1st rack travel in: 10.60  
Speed rpm : 1110...1120  
2nd rack travel in: 4.00  
Speed rpm : 1135...1150  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

## LOW IDLE 1

Control Lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 4.2

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 650  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 650...710

## SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

## TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1080  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 900  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 1000  
Rack travel in m: 12.40...12.60

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 206.0...210.0  
1000 s: (203.0...213.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 1110...1120

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 200.0...220.0  
1000 s: (196.0...224.0)

Engine-speed difference between 1 mm  
regulated and control-rod travel 4 mm =  
25...35 1/min.

In order to adjust and test the EP com-  
bination, set full-load speed regul.  
at 1110...1120 1/min. Then set speed  
regul. to 1060...1070 1/min again.

## APPLICATION

Forage harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 5,9 w  
Edition : 22.11.91  
Replaces : 18.9.91  
Test oil : ISO-4113

Combination no. : 0 402 736 806

Injection pump  
Pump designation : PES6P110A120RS7213  
EP type number : 0 412 716 804  
Governor  
Governor design. : RQV400...1250PA964K  
Governor no. : 0 421 815 252

Customer-spec. information  
Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 171.5  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 115...125

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
: (4.30...4.50)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 15.80...15.90

Del.quantity cm<sup>3</sup>/ : 16.8...17.0

100 s: (16.5...17.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.7...5.9

Del.quantity cm<sup>3</sup>/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 400  
travel mm : 1.60...1.80

2nd speed rpm : 600  
travel mm : 2.80...3.30

3rd speed rpm : 1300  
travel mm : 7.20...7.40

4th speed rpm : 1500  
travel mm : 8.90...9.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1500

Del.quantity : 168.5...170.5

1000 : (165.5...173.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 59...67

Testing:  
1st rack travel in: 14.80  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1475...1505  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 13...21

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 400  
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 15.80...15.90  
2nd speed rpm : 825  
Rack travel in m: 14.70...14.90  
3rd speed rpm : 700  
Rack travel in m: 14.00...14.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1250  
Pressure hPa : 1500  
Rack travel mm : 15.80...15.90

Measurement  
Speed 1/min : 1250

1st pressure hPa : -  
Rack travel in m: 8.10...8.50  
2nd pressure hPa : 375  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 935  
Rack travel in m: 13.70...14.10

## START CUT-OUT

Speed 1/min : 300 (310)

G26

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 825  
Del.quantity cm<sup>3</sup>/ : 178.0...184.0  
1000 s: (175.0...187.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 87.0...91.0  
1000 s: (85.0...93.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.80  
Speed rpm : 1290...1300

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 12.40...13.40

## LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.70...5.90  
Del.quantity cm<sup>3</sup>/ : 32.0...38.0  
1000 s: (30.0...40.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:  
: C.D.C. # 3913440

Start-of-delivery mark 6° cam angle  
after start of delivery cyl. 1



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 r  
Edition : 22.11.91  
Replaces : 21.8.91  
Test oil : ISO-4113

Combination no. : 0 402 736 807

Injection pump  
Pump designation : PES6P110A120RS7214  
EP type number : 0 412 716 805  
Governor  
Governor design. : RQV350...1100PA964-1  
K  
Governor no. : 0 421 815 253

Customer-spec. information  
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 201.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 115...125

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
: (4.30...4.50)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 15.70...15.80

Del.quantity cm3/ : 20.6...20.8

100 s: (20.3...21.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del.quantity cm3/ : 2.7...3.3

100 s: (2.5...3.5)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.80...2.00

2nd speed rpm : 450

travel mm : 3.10...3.50

3rd speed rpm : 600

travel mm : 5.10...5.50

4th speed rpm : 1000

travel mm : 8.10...8.30

5th speed rpm : 1200

travel mm : 9.60...10.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1500

Del.quantity : 206.0...208.0

1000 : (203.0...211.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 64...72

Testing:  
1st rack travel in: 14.40  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1300...1330  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 15.70...15.80  
2nd speed rpm : 650  
Rack travel in m: 13.20...13.60  
3rd speed rpm : 1100  
Rack travel in m: 15.40...15.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1050  
Pressure hPa : 1500  
Rack travel mm : 15.70...15.80

Measurement  
Speed 1/min : 1050

1st pressure hPa : -  
Rack travel in m: 8.40...8.80  
2nd pressure hPa : 340  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 840  
Rack travel in m: 13.60...14.00

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 650  
Del.quantity cm3/ : 187.5...193.5  
1000 s: (184.5...196.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 98.0...102.0  
1000 s: (96.0...104.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.40  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 11.00...12.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Del.quantity cm3/ : 27.0...33.0  
1000 s: (25.0...35.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:  
: C.D.C. # 3916627

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:  
Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 5,9 w 1  
 Edition : 22.11.91  
 Replaces : 18.9.91  
 Test oil : ISO-4113  
 Combination no. : 0 402 736 810  
 Injection pump  
 Pump designation : PES6P110A12ORS7213  
 EP type number : 0 412 716 804  
 Governor  
 Governor design. : RQV400...1250PA964-2  
 K  
 Governor no. : 0 421 815 254

Customer-spec. information  
 Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 141.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 115...125

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
 : (4.30...4.50)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.80...14.90

Del.quantity cm<sup>3</sup>/ : 15.9...16.1

100 s: (15.6...16.4)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.4...5.6  
 Del.quantity cm<sup>3</sup>/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 400  
 travel mm : 1.60...1.80  
 2nd speed rpm : 600  
 travel mm : 2.80...3.30  
 3rd speed rpm : 1300  
 travel mm : 7.20...7.40  
 4th speed rpm : 1500  
 travel mm : 8.90...9.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Aneroid pressure h: 1200  
 Del.quantity : 159.0...161.0  
 1000 : (156.0...164.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 59...67

Testing:

1st rack travel in: 13.80

Speed rpm : 1295...1305

2nd rack travel in: 4.00

Speed rpm : 1460...1490

4th rack travel in: 1600

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 11...19

Testing:

Speed rpm : 275

Minimum rack travel: 7.20

Speed rpm : 400

Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 14.80...14.90

2nd speed rpm : 800

Rack travel in m: 13.10...13.30

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 1250

Pressure hPa : 1200

Rack travel mm : 14.80...14.90

Measurement

Speed 1/min : 1250

1st pressure hPa : -

Rack travel in m: 8.30...8.70

2nd pressure hPa : 365

Rack travel in m: 10.20...10.30

3rd pressure hPa : 690

Rack travel in m: 13.20...13.60

START CUT-OUT

Speed 1/min : 290 (300)

H02

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 158.0...164.0

1000 s: (155.0...167.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 95.5...99.5

1000 s: (93.5...101.5)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

Speed rpm : 1295...1305

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 135.0...175.0

1000 s: (130.0...180.0)

Rack travel in mm : 12.00...13.00

## LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.40...5.60

Del.quantity cm<sup>3</sup>/ : 32.0...38.0

1000 s: (30.0...40.0)

Spread cm<sup>3</sup> : 8.00

1000 s: (12.00)

Remarks:

: C.D.C. # 3919090

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 5,9 w 2  
 Edition : 22.11.91  
 Replaces : 18.9.91  
 Test oil : ISO-4113  
 Combination no. : 0 402 736 811  
 Injection pump  
 Pump designation : PES6P110A120RS7213  
 EP type number : 0 412 716 804  
 Governor  
 Governor design. : RQV400...1250PA964-3  
 K  
 Governor no. : 0 421 815 255

Customer spec. information  
 Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 147.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 115...125

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
 : (4.30...4.50)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.80...14.90

Del.quantity cm<sup>3</sup>/ : 15.8...16.0

100 s: (15.5...16.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 400.0  
 Rack travel in mm : 5.5...5.7  
 Del.quantity cm<sup>3</sup>/ : 3.2...3.8  
 100 s: (3.0...4.0)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 400  
 travel mm : 1.60...1.80  
 2nd speed rpm : 600  
 travel mm : 2.80...3.30  
 3rd speed rpm : 1300  
 travel mm : 7.20...7.40  
 4th speed rpm : 1500  
 travel mm : 8.90...9.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1250  
 Aneroid pressure h: 1200  
 Del.quantity : 158.5...160.5  
 1000 : (155.5...163.5)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

Testing:  
1st rack travel in: 13.80  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1460...1490  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 12...20

Testing:  
Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 400  
Rack travel in mm : 5.50...5.70

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 14.80...14.90  
2nd speed rpm : 800  
Rack travel in m: 13.20...13.40

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 1250  
Pressure hPa : 1200  
Rack travel mm : 14.80...14.90

#### Measurement

Speed 1/min : 1250

1st pressure hPa : -  
Rack travel in m: 8.20...8.60  
2nd pressure hPa : 410  
Rack travel in m: 10.00...10.10  
3rd pressure hPa : 755  
Rack travel in m: 13.20...13.60

#### START CUT-OUT

Speed 1/min : 290 (300)

HD4

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1200  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 156.5...162.5  
1000 s: (153.5...165.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 90.0...94.0  
1000 s: (88.0...96.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.80  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 11.90...12.90

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Del.quantity cm<sup>3</sup>/ : 32.0...38.0  
1000 s: (30.0...40.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: C.D.C. # 3918321

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 r 6  
Edition : 22.11.91  
Replaces : 18.9.91  
Test oil : ISO-4113

Combination no. : 0 402 736 812

Injection pump  
Pump designation : PES6P110A120RS7214  
EP type number : 0 412 716 805  
Governor  
Governor design. : RQV350...1200PA964-4  
K  
Governor no. : 0 421 815 256

Customer-spec. information  
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 156.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 115...125

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
: (4.30...4.50)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.60...12.70

Del.quantity cm<sup>3</sup>/ : 14.7...14.9

100 s: (14.4...15.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del.quantity cm<sup>3</sup>/ : 2.7...3.3

100 s: (2.5...3.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.80...2.00

2nd speed rpm : 450

travel mm : 3.10...3.50

3rd speed rpm : 700

travel mm : 5.90...6.30

4th speed rpm : 1200

travel mm : 9.00...9.20

5th speed rpm : 1400

travel mm : 10.70...11.10

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1200

Del.quantity : 147.5...149.5

1000 : (144.5...152.5)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 11.60

Speed rpm : 1245...1255

2nd rack travel in: 4.00

Speed rpm : 1375...1405

4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 11...19

Testing:

Speed rpm : 275

Minimum rack travel: 7.20

Speed rpm : 350

Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 12.60...12.70

2nd speed rpm : 650

Rack travel in m: 11.20...11.60

3rd speed rpm : 550

Rack travel in m: 11.10...11.50

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 1200

Pressure hPa : 1200

Rack travel mm : 12.60...12.70

Measurement

Speed 1/min : 1200

1st pressure hPa : -

Rack travel in m: 8.00...8.40

2nd pressure hPa : 225

Rack travel in m: 9.20...9.30

3rd pressure hPa : 515

Rack travel in m: 11.10...11.50

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 650

Del.quantity cm3/ : 151.0...157.0

1000 s: (148.0...160.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 90.0...94.0

1000 s: (88.0...96.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 135.0...175.0

1000 s: (130.0...180.0)

Rack travel in mm : 11.00...12.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.70...5.90

Del.quantity cm3/ : 27.0...33.0

1000 s: (25.0...35.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: C.D.C. # 3917088

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 r 4  
Edition : 22.11.91  
Replaces : 18.9.91  
Test oil : ISO-4113

Combination no. : 0 402 736 813

Injection pump  
Pump designation : PES6P110A12ORS7214  
EP type number : 0 412 716 805  
Governor  
Governor design. : RQV350...1100PA964-5  
K  
Governor no. : 0 421 815 257

Customer-spec. information  
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 187.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 115...125

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
: (4.30...4.50)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.50...14.60

Del.quantity cm<sup>3</sup>/ : 18.6...18.8

100 s: (18.3...19.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del.quantity cm<sup>3</sup>/ : 2.7...3.3

100 s: (2.5...3.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.80...2.00

2nd speed rpm : 450  
travel mm : 3.10...3.50

3rd speed rpm : 600  
travel mm : 5.10...5.50

4th speed rpm : 1000  
travel mm : 8.10...8.30

5th speed rpm : 1200  
travel mm : 9.60...10.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1200  
Del.quantity : 186.5...188.5  
1000 : (183.5...191.5)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 62...70

Testing:

1st rack travel in: 13.50  
Speed rpm : 1145...1155

2nd rack travel in: 4.00  
Speed rpm : 1290...1320

4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 11...19

Testing:

Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 650  
Rack travel in m: 13.50...13.70  
3rd speed rpm : 500  
Rack travel in m: 12.90...13.30

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 1100  
Pressure hPa : 1200  
Rack travel mm : 14.50...14.60

Measurement

Speed 1/min : 1100

1st pressure hPa : -  
Rack travel in m: 8.30...8.70  
2nd pressure hPa : 285  
Rack travel in m: 9.70...9.80  
3rd pressure hPa : 700  
Rack travel in m: 12.60...13.00

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm3/ : 198.0...204.0  
1000 s: (195.0...207.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 98.0...102.0  
1000 s: (96.0...104.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50  
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 10.80...11.80

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.70...5.90  
Del.quantity cm3/ : 27.0...33.0  
1000 s: (25.0...35.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: C.D.C. # 3916628

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 r 1  
Edition : 22.11.91  
Replaces : 18.9.91  
Test oil : ISO-4113

Combination no. : 0 402 736 814

Injection pump  
Pump designation : PES6P110A12ORS7214  
EP type number : 0 412 716 805  
Governor  
Governor design. : RQV350...1200PA964-6  
K  
Governor no. : 0 421 815 258

Customer spec. information  
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 187.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 115...125

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
: (4.30...4.50)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 14.50...14.60

Del.quantity cm<sup>3</sup>/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del.quantity cm<sup>3</sup>/ : 2.7...3.3

100 s: (2.5...3.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.80...2.00

2nd speed rpm : 450

travel mm : 3.10...3.50

3rd speed rpm : 700

travel mm : 5.90...6.30

4th speed rpm : 1200

travel mm : 9.00...9.20

5th speed rpm : 1400

travel mm : 10.70...11.10

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1200

Del.quantity : 183.0...185.0

1000 : (180.0...188.0)

Spread      cm<sup>3</sup> : 5.00  
             1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 13.50  
Speed      rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed      rpm : 1405...1435  
4th rack travel in: 1500  
Speed      rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19

Testing:  
Speed      rpm : 275  
Minimum rack travel: 7.20  
Speed      rpm : 350  
Rack travel in mm : 5.40...5.60

#### CONSTANT REGULATION

Speed      rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed      rpm : 1200  
Rack travel in m: 14.50...14.60  
2nd speed      rpm : 650  
Rack travel in m: 11.40...11.80

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed      rpm : 1200  
Pressure    hPa : 1200  
Rack travel mm : 14.50...14.60

#### Measurement

Speed      1/min : 1200

1st pressure hPa : -  
Rack travel in m: 7.70...8.10  
2nd pressure hPa : 270  
Rack travel in m: 9.50...9.60  
3rd pressure hPa : 700  
Rack travel in m: 12.60...13.00

#### START CUT-OUT

Speed      1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1200  
Speed      rpm : 650  
Del.quantity cm<sup>3</sup>/ : 165.5...171.5  
             1000 s: (162.5...174.5)  
Spread      cm<sup>3</sup> : 8.00  
             1000 s: (12.0)  
Aneroid pressure h: -  
Speed      rpm : 500  
Del.quantity cm<sup>3</sup>/ : 90.0...94.0  
             1000 s: (88.0...96.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.50  
Speed      rpm : 1245...1255

#### STARTING FUEL DELIVERY

Speed      rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...175.0  
             1000 s: (130.0...180.0)  
Rack travel in mm : 10.70...11.70

#### LOW IDLE

Speed      rpm : 350  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 27.0...33.0  
             1000 s: (25.0...35.0)  
Spread      cm<sup>3</sup> : 8.00  
             1000 s: (12.00)

#### Remarks:

: C.D.C. # 3917089

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

#### Bow dimension:

Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 r 5  
Edition : 22.11.91  
Replaces : 21.8.91  
Test oil : ISO-4113

Combination no. : 0 402 736 815

Injection pump  
Pump designation : PES6P110A120RS7214  
EP type number : 0 412 716 805  
Governor  
Governor design. : RQV350...1000PA964-7  
K  
Governor no. : 0 421 815 259

Customer-spec. information  
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 194.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 115...125

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test line : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
: (4.30...4.50)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.80...15.90

Del.quantity cm<sup>3</sup>/ : 21.7...21.9

100 s: (21.4...22.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm<sup>3</sup>/ : 2.7...3.3

100 s: (2.5...3.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.60...1.80

2nd speed rpm : 450  
travel mm : 3.00...3.40

3rd speed rpm : 600  
travel mm : 5.20...5.60

4th speed rpm : 1000  
travel mm : 8.40...8.60

5th speed rpm : 1150  
travel mm : 9.80...10.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Aneroid pressure h: 1500  
Del.quantity : 217.0...219.0  
1000 : (214.0...222.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 62...70

#### Testing:

1st rack travel in: 14.30  
Speed rpm : 1050...1060  
2nd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 11...19

#### Testing:

Speed rpm : 275  
Minimum rack travel: 7.20  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 325...520

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 15.80...15.90  
2nd speed rpm : 650  
Rack travel in m: 14.00...14.40  
3rd speed rpm : 1000  
Rack travel in m: 15.30...15.50

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 900  
Pressure hPa : 1500  
Rack travel mm : 15.80...15.90

#### Measurement

Speed 1/min : 900

1st pressure hPa : -  
Rack travel in m: 8.30...8.70  
2nd pressure hPa : 340  
Rack travel in m: 10.20...10.30  
3rd pressure hPa : 840  
Rack travel in m: 13.60...14.00

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1500  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 211.0...217.0  
1000 s: (208.0...220.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 98.0...102.0  
1000 s: (96.0...104.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 14.30  
Speed rpm : 1050...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...175.0  
1000 s: (130.0...180.0)  
Rack travel in mm : 10.90...11.90

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 27.0...33.0  
1000 s: (25.0...35.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: C.D.C. # 3916629

Start-of-delivery mark = 5.5° after  
start of delivery cyl. 1.

#### Bow dimension:

Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 r 2  
Edition : 22.11.91  
Replaces : 18.9.91  
Test oil : ISO-4113

Combination no. : 0 402 736 816

Injection pump  
Pump designation : PES6P110A120RS7214  
EP type number : 0 412 716 805  
Governor  
Governor design. : RQV350...1200PA964-8  
K  
Governor no. : 0 421 815 264

Customer-spec. information  
Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 213.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 115...125

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45  
: (4.30...4.50)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 14.70...14.80

Del.quantity cm3/ : 19.0...19.2

100 s: (18.7...19.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 5.6...5.8  
Del.quantity cm3/ : 2.7...3.3  
100 s: (2.5...3.5)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.80...2.00  
2nd speed rpm : 450  
travel mm : 3.10...3.50  
3rd speed rpm : 700  
travel mm : 5.90...6.30  
4th speed rpm : 1200  
travel mm : 9.00...9.20  
5th speed rpm : 1400  
travel mm : 10.70...11.10

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1200  
Del.quantity : 190.0...192.0  
1000 : (187.0...195.0)





# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9 t5  
Edition : 29.11.91  
Replaces : 26.7.91  
Test oil : ISO-4113

Combination no. : 0 402 736 820

Injection pump  
Pump designation : PES6P120A720/3LS7209  
EP type number : 0 412 726 837  
Governor  
Governor design. : RQV300...1000PA960-5  
K  
Governor no. : 0 421 815 286

Customer-spec. information  
Customer : MAN

Engine : D2866LU04

1st version kW : 309.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90  
(4.75...4.95)  
Rack travel in mm : 15.00...16.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 29.4...29.6

100 s: (29.1...29.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.2...5.6

Del.quantity cm3/ : 3.3...3.9

100 s: (3.0...4.2)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1045  
travel mm : 9.80...10.00

2nd speed rpm : 300  
travel mm : 1.50...1.70

3rd speed rpm : 500  
travel mm : 3.20...3.80

4th speed rpm : 900  
travel mm : 8.10...8.50

5th speed rpm : 1350  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1075

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1300  
Del.quantity : 294.0...296.0  
1000 : (291.0...299.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 295...303

#### Testing:

1st rack travel in: 12.80  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 249...257

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.90  
Speed rpm : 300  
Rack travel in mm : 5.30...5.50

#### CONSTANT REGULATION

Speed rpm : 300...420

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 13.50...13.60  
2nd speed rpm : 900  
Rack travel in m: 13.80...14.00  
3rd speed rpm : 1000  
Rack travel in m: 13.80...14.00  
4th speed rpm : 600  
Rack travel in m: 12.60...12.80

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 1000  
Pressure hPa : 1300  
Rack travel mm : 13.80...14.00

##### Measurement

Speed 1/min : 1000

1st pressure hPa : -  
Rack travel in m: 9.10...9.30

2nd pressure hPa : 200  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 565  
Rack travel in m: 11.40...11.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1300  
Speed rpm : 1000  
Del.quantity cm3/ : 285.0...291.0  
1000 s: (282.0...294.0)  
Aneroid pressure h: 1300  
Speed rpm : 600  
Del.quantity cm3/ : 282.0...286.0  
1000 s: (279.0...289.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 169.0...171.0  
1000 s: (166.0...174.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 195.0...235.0  
1000 s: (191.0...239.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.20...5.60  
Del.quantity cm3/ : 33.0...39.0  
1000 s: (30.0...42.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 3-7130

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 6  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FOR 7,8 k 1  
Edition : 04.12.91  
Replaces : 30.8.91  
Test oil : ISO-4113

Combination no. : 0 402 746 863

Injection pump  
Pump designation : PES6P120A72ORS7179  
EP type number : 0 412 726 826  
Governor  
Governor design. : RQV350...1150PA917K  
Governor no. : 0 421 815 214

Customer-spec. information  
Customer : FNH

Engine : 7.8L

1st version kW : 201.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 072

Overflow  
quantity min. 1/h: 160...170

Test nozzle holder  
assembly : 1 688 901 103

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 4.35...4.45  
: (4.30...4.50)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 21.7...21.9

100 s: (21.4...22.2)

Spread cm3 : 0.7

100 s: (1.1)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.4

Del.quantity cm3/ : 2.0...2.6

100 s: (1.8...2.8)

Spread cm3 : 0.5

100 s: (0.9)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1215

travel mm : 9.40...9.60

2nd speed rpm : 350

travel mm : 2.20...2.40

3rd speed rpm : 450

travel mm : 3.40...4.00

4th speed rpm : 800

travel mm : 6.10...6.50

5th speed rpm : 1550

travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1380

Rack travel in mm : 6.00...13.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 1400  
Del.quantity : 217.0...219.0  
1000 : (214.0...222.0)  
Spread cm3 : 7.00  
1000 : (11.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...124

#### Testing:

1st rack travel in: 13.00  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1345...1375  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 64...72

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.70  
Speed rpm : 350  
Rack travel in mm : 5.00...5.40

#### CONSTANT REGULATION

Speed rpm : 320...440

#### TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 14.00...14.10  
2nd speed rpm : 750  
Rack travel in m: 12.40...12.60  
3rd speed rpm : 550  
Rack travel in m: 11.30...11.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 1150  
Pressure hPa : 1400  
Rack travel mm : 14.00...14.10

#### Measurement

Speed 1/min : 1150

1st pressure hPa : -  
Rack travel in m: 7.90...8.30  
2nd pressure hPa : 300  
Rack travel in m: 9.50...9.60

3rd pressure hPa : 850  
Rack travel in m: 12.40...12.80

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1400  
Speed rpm : 750  
Del.quantity cm3/ : 212.0...218.0  
1000 s: (209.0...221.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 110.0...114.0  
1000 s: (108.0...116.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1210...1220

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 150.0...180.0  
1000 s: (145.0...185.0)  
Rack travel in mm : 10.90...11.50

Remarks:

#### Bow dimension:

Sliding-sleeve position = 37.0 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 11,8 L1  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 898  
 Injection pump  
 Pump designation : PES6P120A320RS7215  
 EP type number : 0 412 726 838  
 Governor  
 Governor design. : RQV250...1000PA967  
 Governor no. : 0 421 813 876

Customer-spec. information  
 Customer : ENASA

Engine : 96 R1 FX

1st version kW : 294.0  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.30...13.40

Del.quantity cm3/ : 29.6...29.8

100 s: (29.3...30.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0  
 Rack travel in mm : 5.7...6.1  
 Del.quantity cm3/ : 1.0...1.6  
 100 s: (0.7...1.9)  
 Spread cm3 : 0.8  
 100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.00...1.40  
 2nd speed rpm : 350  
 travel mm : 2.10...2.60  
 3rd speed rpm : 700  
 travel mm : 4.70...5.30  
 4th speed rpm : 1055  
 travel mm : 7.90...8.10  
 5th speed rpm : 1145  
 travel mm : 9.00...9.40

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1070  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 1200

Del.quantity : 296.0...298.0  
1000 : (293.0...301.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 119...127

#### Testing:

1st rack travel in: 12.30  
Speed rpm : 1050...1060  
2nd rack travel in: 4.00  
Speed rpm : 1135...1165  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 73...81

#### Testing:

Speed rpm : 100  
Minimum rack travel: 5.00  
Speed rpm : 250  
Rack travel in mm : 3.30...3.70

#### CONSTANT REGULATION

Speed rpm : 250...320

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.30...13.40

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.70  
2nd pressure hPa : 770  
Rack travel in m: 12.20...12.30  
3rd pressure hPa : 330  
Rack travel in m: 9.80...10.00

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

H2O

Aneroid pressure h: 1200  
Speed rpm : 900  
Del.quantity cm3/ : 288.0...294.0  
1000 s: (285.0...297.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 146.0...149.0  
1000 s: (143.0...152.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.30  
Speed rpm : 1050...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (131.0...159.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.30...3.70

Remarks:

:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 n  
Edition : 29.11.91  
Replaces : 24.4.91  
Test oil : ISO-4113

Combination no. : 0 402 746 907

Injection pump  
Pump designation : PES6P120A320RS7231  
EP type number : 0 412 726 844  
Governor  
Governor design. : RQV275...1000PA927-1  
Governor no. : 0 421 813 923

Customer-spec. information  
Customer : RVI

Engine : MIDR 06-20-45

1st version kW : 249.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.65...4.75  
: (4.60...4.80)  
Rack travel in mm : 13.50...14.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 24.3...24.5

100 s: (24.0...24.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0  
Rack travel in mm : 4.7...5.1  
Del.quantity cm3/ : 2.8...3.4  
100 s: (2.5...3.7)  
Spread cm3 : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1060  
travel mm : 8.10...8.30  
2nd speed rpm : 275  
travel mm : 1.10...1.50  
3rd speed rpm : 500  
travel mm : 3.60...4.20  
4th speed rpm : 750  
travel mm : 5.70...6.10  
5th speed rpm : 1400  
travel mm : 11.00...12.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1140  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 1000  
Del.quantity : 243.0...245.0  
1000 : (240.0...248.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 297...305

#### Testing:

1st rack travel in: 12.90  
Speed rpm : 1055...1065  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 242...250

#### Testing:

Speed rpm : 200  
Minimum rack travel: 6.10  
Speed rpm : 275  
Rack travel in mm : 4.80...5.00

#### CONSTANT REGULATION

Speed rpm : 310...430

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.90...14.00

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.50  
2nd pressure hPa : 520  
Rack travel in m: 12.70...12.80  
3rd pressure hPa : 240  
Rack travel in m: 9.90...10.30

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1000

Del.quantity cm<sup>3</sup>/ : 239.0...245.0  
1000 s: (236.0...248.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 125.0...127.0  
1000 s: (122.0...130.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.90  
Speed rpm : 1055...1065

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 135.0...165.0  
1000 s: (131.0...169.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.70...5.10  
Del.quantity cm<sup>3</sup>/ : 28.0...34.0  
1000 s: (25.0...37.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 m  
Edition : 22.11.91  
Replaces : 18.6.91  
Test oil : ISO-4113

Combination no. : 0 402 746 911

Injection pump  
Pump designation : PES6P120A720RS7239  
EP type number : 0 412 726 850  
Governor  
Governor design. : RQV325...900PA944-13  
K  
Governor no. : 0 421 815 284

Customer spec. information  
Customer : MACK TRUCKS

Engine : E7-350 ITC

1st version kW : 261.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 2 417 413 011

Overflow  
quantity min. 1/h: 160...170

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.25...3.35  
: (3.20...3.40)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Phasing :  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900  
Rack travel in mm : 12.80...12.90  
Del.quantity cm<sup>3</sup>/ : 23.1...23.3  
100 s: (22.8...23.6)  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

2nd speed rpm : 325.0  
Rack travel in mm : 5.0...5.2  
Del.quantity cm<sup>3</sup>/ : 4.6...5.2  
100 s: (4.4...5.4)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325  
travel mm : 1.20...1.40  
2nd speed rpm : 450  
travel mm : 2.80...3.20  
3rd speed rpm : 650  
travel mm : 5.60...5.80  
4th speed rpm : 900  
travel mm : 8.30...8.50  
5th speed rpm : 1100  
travel mm : 10.30...10.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Aneroid pressure h: 1200  
Del.quantity : 231.5...233.5  
1000 : (228.5...236.5)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 11.80

Speed rpm : 940...990

2nd rack travel in: 4.00

Speed rpm : 1090...1100

4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 8...16

Testing:

Speed rpm : 275

Minimum rack travel: 6.20

Speed rpm : 325

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 12.80...12.90

2nd speed rpm : 625

Rack travel in m: 12.70...13.00

3rd speed rpm : 550

Rack travel in m: 11.80...12.20

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 625

Pressure hPa : 1200

Rack travel mm : 12.70...13.00

Measurement

Speed 1/min : 625

1st pressure hPa : -

Rack travel in m: 7.40...7.80

2nd pressure hPa : 365

Rack travel in m: 8.90...9.00

3rd pressure hPa : 665

Rack travel in m: 11.30...11.70

START CUT-OUT

Speed 1/min : 250 (255)

## FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 625

Del.quantity cm3/ : 266.5...272.5

1000 s: (263.5...275.5)

Spread cm3 : 8.00

1000 s: (12.0)

Speed rpm : 875

Del.quantity cm3/ : 199.0...201.0 \*

1000 s: (180.5...207.0)

Aneroid pressure h: -

Speed rpm : 400

Del.quantity cm3/ : 147.5...151.5

1000 s: (145.5...153.5)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 940...990

## STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 210.0...240.0

1000 s: (205.0...245.0)

Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 325

Rack travel in mm : 5.00...5.20

Del.quantity cm3/ : 46.5...52.5

1000 s: (44.5...54.5)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5203-P8

Bow dimension:

Sliding-sleeve position = 37.0 mm

\* This test specification applies only to the engine/nozzle-and-holder assemblies on an injection-pump test bench: setting for test equipment, check value for engine equipment.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAC 12,0 m1  
 Edition : 22.11.91  
 Replaces : 18.6.91  
 Test oil : ISO-4113  
 Combination no. : 0 402 746 912  
 Injection pump  
 Pump designation : PES6P120A720RS7239  
 EP type number : 0 412 726 850  
 Governor  
 Governor design. : RQV325...875PA944-14  
 K  
 Governor no. : 0 421 815 285

Customer-spec. information  
 Customer : MACK TRUCKS

Engine : EM7-300 ITC

1st version kW : 224.0  
 Rated speed : 1750

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 011

Overflow  
 quantity min. 1/h: 160...170

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.25...3.35  
 : (3.20...3.40)  
 Rack travel in mm : 11.00...13.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 11.20...11.30

Del.quantity cm<sup>3</sup>/ : 21.6...21.8

100 s: (21.3...22.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.4...4.6

Del.quantity cm<sup>3</sup>/ : 4.6...5.2

100 s: (4.4...5.4)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.70...1.90

2nd speed rpm : 450

travel mm : 4.20...4.60

3rd speed rpm : 650

travel mm : 8.00...8.40

4th speed rpm : 900

travel mm : 10.00...10.20

5th speed rpm : 1000

travel mm : 10.80...11.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del.quantity : 216.5...218.5

1000 : (213.5...221.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 63...71

Testing:  
1st rack travel in: 10.20  
Speed rpm : 915...965  
2nd rack travel in: 4.00  
Speed rpm : 1015...1025  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17

Testing:  
Speed rpm : 275  
Minimum rack travel: 6.00  
Speed rpm : 325  
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION  
Speed rpm : 325...520

TORQUE CONTROL  
Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 510  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 450  
Rack travel in m: 11.80...12.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 510  
Pressure hPa : 1200  
Rack travel mm : 12.90...13.10

Measurement  
Speed 1/min : 510

1st pressure hPa : -  
Rack travel in m: 7.10...7.50  
2nd pressure hPa : 370  
Rack travel in m: 8.70...8.80  
3rd pressure hPa : 730  
Rack travel in m: 11.50...11.90

START CUT-OUT

Speed 1/min : 250 (255)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 510  
Del.quantity cm3/ : 315.5...321.5  
1000 s: (312.5...324.5)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Speed rpm : 875  
Del.quantity cm3/ : 199.0...201.0  
1000 s: (159.5...183.0)  
Aneroid pressure h: -  
Speed rpm : 400  
Del.quantity cm3/ : 160.0...164.0  
1000 s: (158.0...166.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 915...965

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 210.0...240.0  
1000 s: (205.0...245.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 325  
Rack travel in mm : 4.40...4.60  
Del.quantity cm3/ : 46.0...52.0  
1000 s: (44.0...54.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

: MACK # 313GC5203-P6

Bow dimension:  
Sliding-sleeve position = 37.0 mm  
\* This test specification applies only  
to the engine/nozzle-and-holder  
assemblies on an injection-pump test  
bench: setting for test equipment,  
check value for engine equipment.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,8 t  
Edition : 29.11.91  
Replaces : 26.4.91  
Test oil : ISO-4113

Combination no. : 0 402 746 914

Injection pump  
Pump designation : PES6P12DA720LS7238  
EP type number : 0 412 726 852  
Governor  
Governor design. : RQ300/1100PA1008  
Governor no. : 0 421 801 591

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM447 HLA

1st version kW : 220.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 105

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
x Wall thickness  
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60  
: (5.45...5.65)  
Rack travel in mm : 20.00...21.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.00...14.20

Del.quantity cm<sup>3</sup>/ : 21.3...21.5

100 s: (21.0...21.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0  
Rack travel in mm : 6.2...6.8  
Del.quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 600

Del.quantity : 213.0...215.0

1000 : (210.0...218.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.60  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.5

Testing:

Speed rpm : 200  
Minimum rack travel: 8.40  
Speed rpm : 300  
Rack travel in mm : 6.20...6.80  
Rack travel in mm : 2.00  
Speed rpm : 370...410

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 600  
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600

1st pressure hPa : 250  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 400  
Rack travel in m: 13.60...13.80  
3rd pressure hPa : 800  
Rack travel in m: 14.20...14.40  
4th pressure hPa : 890  
Rack travel in m: 14.50...14.70  
5th pressure hPa : -  
Rack travel in m: 11.50...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400  
Speed rpm : 1100  
Del.quantity cm3/ : 229.0...232.0  
1000 s: (226.0...235.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1400  
Speed rpm : 800  
Del.quantity cm3/ : 238.0...242.0  
1000 s: (235.0...245.0)

Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 147.0...149.0  
1000 s: (144.0...152.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.60  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 11.50...11.80

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 6,2 L  
Edition : 29.11.91  
Replaces : 8.10.91  
Test oil : ISO-4113

Combination no. : 0 402 746 924

Injection pump  
Pump designation : PES6P110A320RS7243  
EP type number : 0 412 716 806  
Governor  
Governor design. : RQV275...1250PA942-2  
K  
Governor no. : 0 421 815 288

Customer-spec. information  
Customer : RVI

Engine : MIDR06-06-26 L/2

1st version kW : 132.5  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.85...4.95  
: (4.80...5.00)  
Rack travel in mm : 13.00...14.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 13.70...13.80

Del.quantity cm<sup>3</sup>/ : 14.0...14.2

100 s: (14.0...14.2)

2nd speed rpm : 275.0  
Rack travel in mm : 5.9...6.3  
Del.quantity cm<sup>3</sup>/ : 2.3...2.8  
100 s: (2.3...2.8)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1320  
travel mm : 9.70...9.90  
2nd speed rpm : 275  
travel mm : 0.90...1.10  
3rd speed rpm : 600  
travel mm : 4.20...4.60  
4th speed rpm : 1000  
travel mm : 7.00...7.40  
5th speed rpm : 1600  
travel mm : 13.00...14.00

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1470  
Rack travel in mm : 8.80...11.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1250  
Aneroid pressure h: 1000  
Del.quantity : 140.0...142.0  
1000 : (140.0...142.0)

## RATED SPEED

1st version  
Control lever  
position degrees: 276...284

Testing:

1st rack travel in: 12.70  
Speed rpm : 1320...1330  
2nd rack travel in: 4.00  
Speed rpm : 1465...1495  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 219...227

Testing:

Speed rpm : 200  
Minimum rack travel: 6.70  
Speed rpm : 275  
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

Speed rpm : 350...480

TORQUE CONTROL

Dimension a mm : 1.30  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 13.70...13.80  
2nd speed rpm : 650  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 300  
Rack travel in m: 12.00...12.40

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 1250  
Pressure hPa : 1000  
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 1250

1st pressure hPa : -  
Rack travel in m: 10.80...11.00  
2nd pressure hPa : 300  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 180  
Rack travel in m: 11.20...11.60

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

J02

1st version

Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 126.0...130.0  
1000 s: (126.0...130.0)  
Speed rpm : 650  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 79.0...81.0  
1000 s: (79.0...81.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70  
Speed rpm : 1320...1330

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...120.0  
1000 s: (96.0...124.0)

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.90...6.30  
Del.quantity cm3/ : 23.0...28.0  
1000 s: (23.0...28.0)

Remarks:

:

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,7 n  
Edition : 22.11.91  
Replaces : 18.9.91  
Test oil : ISO-4113

Combination no. : 0 402 776 808

Injection pump  
Pump designation : PES6P120A720RS7223  
EP type number : 0 412 726 843  
Governor  
Governor design. : RSV400...1050POA547  
Governor no. : 0 421 833 349

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6101 HZ010

1st version kW : 241.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 2 417 413 075

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 140...150

Test nozzle holder  
assembly : 1 688 901 103

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,7

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X3.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
: (3.50...3.70)

Rack travel in mm : 10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.90...13.00

Del.quantity cm<sup>3</sup>/ : 23.2...23.4

100 s: (22.9...23.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.9...6.1

Del.quantity cm<sup>3</sup>/ : 1.9...2.5

100 s: (1.7...2.7)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del.quantity : 232.5...234.5

1000 : (229.5...237.5)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 39...47

Testing:

1st rack travel in: 11.90  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1155...1165  
3rd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.5

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.90...6.10

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 800  
Rack travel in m: 13.20...13.40

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 13.20...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.60...10.80  
2nd pressure hPa : 390  
Rack travel in m: 11.60...11.70  
3rd pressure hPa : 700  
Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200  
Speed rpm : 800

Del.quantity cm<sup>3</sup>/ : 243.0...249.0  
1000 s: (240.0...252.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 145.0...149.0  
1000 s: (143.0...151.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 85.0...125.0  
1000 s: (80.0...130.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 19.5...25.5  
1000 s: (17.5...27.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

Adjustment without torque-control E47014  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 7,1 f  
Edition : 29.11.91  
Replaces : 18.9.91  
Test oil : ISO-4113

Combination no. : 0 402 846 050

Injection pump  
Pump designation : PE6P110A32ORS8009  
EP type number : 0 412 816 010  
Governor  
Governor design. : RQV250...1200PA953K  
Governor no. : 0 421 815 996

Customer-spec. information  
Customer : VOLVO-TRUCK

Engine : TD73EB

1st version kW : 184.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 064

Inlet press., bar : 2.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
: (3.75...3.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.10...12.20

Del.quantity cm3/ : 19.6...19.8

100 s: (19.4...20.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...5.1

Del.quantity cm3/ : 2.1...2.5  
100 s: (1.8...2.8)

Spread cm3 : 0.7

100 s: (1.1)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.10...1.50

2nd speed rpm : 400  
travel mm : 3.00...3.60

3rd speed rpm : 850  
travel mm : 6.70...7.30

4th speed rpm : 1250  
travel mm : 10.30...10.50

5th speed rpm : 1350  
travel mm : 11.40...11.80

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1240

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 196.0...198.0  
1000 : (194.0...200.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

#### Testing:

1st rack travel in: 11.30  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1350...1380  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 69...77

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90

#### CONSTANT REGULATION

Speed rpm : 300...450

#### TORQUE CONTROL

Dimension a mm : 1.70  
Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 12.10...12.20  
2nd speed rpm : 1200  
Rack travel in m: 12.30...12.50  
3rd speed rpm : 850  
Rack travel in m: 12.20...12.50  
4th speed rpm : 350  
Rack travel in m: 10.60...10.90

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 1200  
Pressure hPa : 1200  
Rack travel mm : 12.30...12.50

##### Measurement

Speed 1/min : 1200

1st pressure hPa : -  
Rack travel in m: 7.30...7.50  
2nd pressure hPa : 90

Rack travel in m: 7.50...7.60  
3rd pressure hPa : 830  
Rack travel in m: 11.70...11.90

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1200  
Del.quantity cm3/ : 165.0...169.0  
1000 s: (162.0...172.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 99.0...101.0  
1000 s: (96.0...104.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1260...1270

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 7,1 f 1  
 Edition : 29.11.91  
 Replaces : 18.9.91  
 Test oil : ISO-4113  
 Combination no. : 0 402 846 051  
 Injection pump  
 Pump designation : PE6P110A32ORS8009  
 EP type number : 0 412 816 010  
 Governor  
 Governor design. : RQV250...1200PA953-1  
 K  
 Governor no. : 0 421 815 995

Customer-spec. information  
 Customer : VOLVO-TRUCK

Engine : TD73EA

1st version kW : 158.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 064

Inlet press., bar : 2.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
 : (3.75...3.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.20...10.30

Del.quantity cm3/ : 15.9...16.1

100 s: (15.7...16.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...5.1

Del.quantity cm3/ : 2.1...2.5

100 s: (1.8...2.8)

Spread cm3 : 0.7

100 s: (1.1)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 1.10...1.50

2nd speed rpm : 400  
 travel mm : 3.00...3.60

3rd speed rpm : 850  
 travel mm : 6.70...7.30

4th speed rpm : 1250  
 travel mm : 10.30...10.50

5th speed rpm : 1350  
 travel mm : 11.40...11.80

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1

Speed rpm : 1240

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200  
Del.quantity : 159.0...161.0  
1000 : (157.0...163.0)  
Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 117...125

Testing:  
1st rack travel in: 10.10  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1330...1360  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 69...77

Testing:  
Speed rpm : 100  
Minimum rack trave: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90

#### CONSTANT REGULATION

Speed rpm : 300...450

#### TORQUE CONTROL

Dimension a mm : 1.60  
Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 1200  
Rack travel in m: 11.10...11.30  
3rd speed rpm : 1100  
Rack travel in m: 11.00...11.30  
4th speed rpm : 350  
Rack travel in m: 9.50...9.80

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 1200  
Pressure hPa : 1200  
Rack travel mm : 11.10...11.30

#### Measurement

Speed 1/min : 1200

1st pressure hPa : -  
Rack travel in m: 7.30...7.50

2nd pressure hPa : 90  
Rack travel in m: 7.50...7.60  
3rd pressure hPa : 740  
Rack travel in m: 11.20...11.40

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 1200  
Del.quantity cm3/ : 146.0...150.0  
1000 s: (143.0...153.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 99.0...101.0  
1000 s: (96.0...104.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1260...1270

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 7,1 h  
Edition : 29.11.91  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 846 052

Injection pump  
Pump designation : PE6P110A320RS8009-1  
EP type number : 0 412 816 011  
Governor  
Governor design. : RQV300...1100PA1017  
Governor no. : 0 421 813 965

Customer-spec. information  
Customer : VME

Engine : TD73KBE

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 078

Inlet press., bar : 2.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.80...3.90  
: (3.75...3.95)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.00...10.10

Del.quantity cm<sup>3</sup>/ : 16.4...16.6

100 s: (16.2...16.8)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...5.1

Del.quantity cm<sup>3</sup>/ : 2.1...2.5

100 s: (1.8...2.8)

Spread cm<sup>3</sup> : 0.7

100 s: (1.1)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 0.90...1.30

2nd speed rpm : 500  
travel mm : 3.10...3.70

3rd speed rpm : 800  
travel mm : 5.60...6.20

4th speed rpm : 1150  
travel mm : 9.10...9.30

5th speed rpm : 1300  
travel mm : 11.00...11.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1200

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 164.0...166.0

1000 : (162.0...168.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 113...121

Testing:  
1st rack travel in: 9.00  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1320  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 80...88

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION  
Speed rpm : 300...360

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 1000  
Pressure hPa : 1200  
Rack travel mm : 10.00...10.10

Measurement  
Speed 1/min : 1000

1st pressure hPa : -  
Rack travel in m: 7.70...7.90  
2nd pressure hPa : 90  
Rack travel in m: 7.90...8.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 116.0...118.0  
1000 s: (113.0...121.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.00  
Speed rpm : 1140...1150

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,1 G  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 244 030  
 Injection pump  
 Pump designation : PES4MW100/720RS1513  
 EP type number : 0 413 204 011  
 Governor  
 Governor design. : RQV300...1300MW119  
 Governor no. : 0 420 083 251

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM364LA

1st version kW : 102.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)

Rack travel in mm : 21.00...0.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 11.8...12.0

100 s : (11.6...12.2)

Spread cm3 : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.4

Del.quantity cm3/ : 1.0...1.4

100 s : (0.7...1.6)

Spread cm3 : 0.3

100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 118.0...120.0

1000 : (116.0...122.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 110...118

Testing:

1st rack travel in: 11.80

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1455...1485

4th rack travel in: 1550

Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.3

Testing:  
Speed rpm : 200  
Minimum rack travel: 6.00  
Speed rpm : 300  
Rack travel in mm : 4.20...4.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.00...9.10

Measurement  
Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 9.70...9.90  
2nd pressure hPa : 500  
Rack travel in m: 11.80...12.00  
3rd pressure hPa : 1000  
Rack travel in m: 12.80...12.90

#### START CUT-OUT

Speed 1/min : 200 (230)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm3/ : 112.5...115.5  
1000 s: (110.0...118.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 46.0...48.0  
1000 s: (44.0...50.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 105.0...115.0  
1000 s: (102.0...118.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.20...4.40  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,1 F  
Edition : 29.11.91  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 246 030  
Injection pump  
Pump designation : PES6MM100/720RS1511  
EP type number : 0 413 206 011  
Governor  
Governor design. : RQ300/1300MW105-9  
Governor no. : 0 420 082 061

Customer spec. information  
Customer : MB-NFZ

Engine : OM366LA

1st version kW : 177.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.20...5.30  
: (5.15...5.35)

Rack travel in mm : 21.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.40...13.50

Del.quantity cm3/ : 13.0...13.2

100 s: (12.8...13.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 4.2...4.4

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 108

Speed rpm : 1000

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 130.0...132.0

1000 : (128.0...136.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 101...109

Setting point:

Speed rpm : 1000

Rack travel in mm : 15.5

Testing:

1st rack travel in: 12.40

Speed rpm : 1345...1360

2nd rack travel in: 4.00

Speed rpm : 1455...1485

4th rack travel in: 1550  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control Lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.3

#### Testing:

Speed rpm : 200  
Minimum rack travel: 6.00  
Speed rpm : 300  
Rack travel in mm : 4.20...4.40

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.00...9.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in mm : 10.00...10.20  
2nd pressure hPa : 600  
Rack travel in mm : 12.10...12.30  
3rd pressure hPa : 1000  
Rack travel in mm : 13.40...13.50

#### START CUT-OUT

Speed 1/min : 180 (200)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 122.5...125.5  
1000 s: (120.0...128.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 46.0...48.0  
1000 s: (44.0...50.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack travel: 12.40  
Speed rpm : 1345...1360

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 115.0...125.0  
1000 s: (112.0...128.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.20...4.40  
Del.quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PER 5,8 D  
Edition : 23.10.91  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 444 119  
Injection pump  
Pump designation : PES4MW100/320RS1199  
EP type number : 0 413 404 112  
Governor  
Governor design. : RQV300...1300MW110K  
Governor no. : 0 420 083 996

Customer-spec. information  
Customer : PERKINS

Engine : 110 TI

1st version kW : 82.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.30...3.40  
(3.25...3.45)  
Rack travel in mm : 12.00...14.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.00...13.10

Del.quantity cm3/ : 12.4...12.6

100 s: (12.2...12.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0  
Rack travel in mm : 6.1...6.3  
Del.quantity cm3/ : 1.6...2.0  
100 s: (1.3...2.2)  
Spread cm3 : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
travel mm : 10.00...10.40  
2nd speed rpm : 900  
travel mm : 6.40...6.60  
3rd speed rpm : 480  
travel mm : 3.10...3.70  
4th speed rpm : 300  
travel mm : 1.40...1.80

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1380  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1300  
Aneroid pressure h: 900  
Del.quantity : 124.0...126.0  
1000 : (122.0...128.0)

Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 118...126

#### Testing:

1st rack travel in: 12.00  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1450...1480  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control Lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30

#### CONSTANT REGULATION

Speed rpm : 330...500

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 13.00...13.10  
2nd speed rpm : 800  
Rack travel in m: 12.00...12.20  
3rd speed rpm : 500  
Rack travel in m: 10.10...10.30  
4th speed rpm : 1000  
Rack travel in m: 12.40...12.70  
5th speed rpm : 400  
Rack travel in m: 9.70...9.90

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.70...8.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : 130

Rack travel in m: 9.00...9.10  
2nd pressure hPa : 180  
Rack travel in m: 9.70...10.00  
3rd pressure hPa : 900  
Rack travel in m: 10.10...10.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 118.0...121.0  
1000 s: (115.5...123.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 77.0...79.0  
1000 s: (75.0...81.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.00  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 90.0...100.0  
1000 s: (87.0...103.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery blocking 46.5°  
before start of delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 4,0 I 5  
Edition : 29.11.91  
Replaces : 09.91  
Test oil : ISO-4113

Combination no. : 0 403 444 136

Injection pump  
Pump designation : PES4MW100/72ORS1212  
EP type number : 0 413 404 114  
Governor  
Governor design. : RQV300...1300MW123-1  
Governor no. : 0 420 083 256

Customer-spec. information  
Customer : MB-NFZ

Engine : OM364LA

1st version kW : 102.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.20...13.30

Del.quantity cm<sup>3</sup>/ : 10.1...10.3

100 s: (9.9...10.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...6.7

Del.quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450  
travel mm : 9.50...9.90

2nd speed rpm : 1350  
travel mm : 8.50...8.70

3rd speed rpm : 500  
travel mm : 2.70...3.30

4th speed rpm : 300  
travel mm : 0.70...1.10

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 110...118

Testing:  
1st rack travel in: 12.20  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1460...1490  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.6

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.50...6.70

CONSTANT REGULATION  
Speed rpm : 320...550

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.20...10.30

Measurement  
Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 10.90...11.10  
2nd pressure hPa : 400  
Rack travel in m: 12.30...12.50  
3rd pressure hPa : 700  
Rack travel in m: 13.20...13.30

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm3/ : 86.0...89.0  
1000 s: (83.5...91.5)

Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 36.0...38.0  
1000 s: (34.0...40.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 85.0...95.0  
1000 s: (82.0...98.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.50...6.70  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,7 A 3  
 Edition : 23.10.91  
 Replaces : 10.90  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 261  
 Injection pump  
 Pump designation : PES6MW100/320RS1204  
 EP type number : 0 413 406 192  
 Governor  
 Governor design. : RQV350...1350MW46-32  
 Governor no. : 0 420 083 225

Customer-spec. information  
 Customer : NAVISTAR

Engine : DTA-360 HT

1st version kW : 142.0  
 Rated speed : 2700

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35  
 : (3.20...3.40)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450 \*

travel mm : 8.20...8.60

2nd speed rpm : 1350

travel mm : 7.40...7.60

3rd speed rpm : 500

travel mm : 2.50...3.10

4th speed rpm : 350

travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 114.0...116.0

1000 : (112.0...118.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 104...112

#### Testing:

1st rack travel in: 9.60  
Speed rpm : 1415...1435  
2nd rack travel in: 4.00  
Speed rpm : 1510...1520  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40

#### CONSTANT REGULATION

Speed rpm : 300...450

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1350  
Rack travel in m: 10.60...10.70  
2nd speed rpm : 850  
Rack travel in m: 11.10...11.20  
3rd speed rpm : 1300  
Rack travel in m: 10.60...10.70  
4th speed rpm : 1150  
Rack travel in m: 11.00...11.20

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.30...8.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : 210  
Rack travel in m: 8.80...8.90  
2nd pressure hPa : 385  
Rack travel in m: 10.40...10.80  
3rd pressure hPa : 900  
Rack travel in m: 11.10...11.20

#### START CUT-OUT

Speed 1/min : 280 (290)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 900  
Speed rpm : 1350  
Del.quantity cm3/ : 105.0...109.0  
1000 s: (103.0...111.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 62.5...64.5  
1000 s: (60.5...66.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1415...1435

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 13.00...14.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

: IHC #1818799C91

Only perform pump setting with original  
overflow valve without IH hose and  
restrictor 1.2 mm diameter.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,1 D 1  
Edition : 29.11.91  
Replaces : 02.91  
Test oil : ISO-4113

Combination no. : 0 403 446 274

Injection pump  
Pump designation : PES6MW100/72ORS1131  
EP type number : 0 413 406 123  
Governor  
Governor design. : RQ300/1300MW105-3  
Governor no. : 0 420 082 050

Customer-spec. information  
Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 121.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 715 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1400

travel mm : 8.80...9.20

2nd speed rpm : 1300

travel mm : 7.50...7.70

3rd speed rpm : 500

travel mm : 4.90...5.50

4th speed rpm : 300

travel mm : 2.10...2.50

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 107

Speed rpm : 1200

Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 96...104

Setting point:  
Speed rpm : 1200  
Rack travel in mm : 15.5

Testing:  
1st rack travel in: 9.90  
Speed rpm : 1345...1360  
2nd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 510...550

TORQUE CONTROL  
Dimension a mm : 0.70  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 750  
Rack travel in m: 11.60...11.70  
3rd speed rpm : 1100  
Rack travel in m: 11.10...11.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 200  
Rack travel mm : 10.20...10.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.70...9.80  
3rd pressure hPa : 700  
Rack travel in m: 11.60...11.70

START CUT-OUT

Speed 1/min : 200 (230)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm3/ : 86.0...89.0  
1000 s: (83.5...91.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 49.0...51.0  
1000 s: (47.0...53.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.90  
Speed rpm : 1345...1360

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 6,2 F  
Edition : 23.10.91  
Replaces : 09.91  
Test oil : ISO-4113

Combination no. : 0 403 446 281

Injection pump  
Pump designation : PES6MW100/720RS1217  
EP type number : 0 413 406 207  
Governor  
Governor design. : RQ300/1000MW116  
Governor no. : 0 420 082 056

Customer-spec. information  
Customer : MWM

Engine : TBD226B-6

1st version kW : 150.0  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
: (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 14.4...14.6

100 s: (14.2...14.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.0...7.2

Del.quantity cm3/ : 1.1...1.5

100 s: (0.8...1.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1100

travel mm : 7.30...7.70

2nd speed rpm : 1000

travel mm : 5.90...6.10

3rd speed rpm : 370

travel mm : 4.70...5.30

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 108

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 144.0...146.0

1000 : (142.0...148.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 91...99

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 11.50  
Speed rpm : 1040...1055  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 74...82  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.1

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 7.00...7.20

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.80...8.90

Measurement  
Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 650  
Rack travel in m: 11.60...11.80  
3rd pressure hPa : 1200  
Rack travel in m: 12.50...12.60

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 750

Del.quantity cm<sup>3</sup>/ : 143.5...146.5  
1000 s: (141.0...149.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 64.0...66.0  
1000 s: (62.0...68.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1040...1055

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 95.0...105.0  
1000 s: (92.0...108.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.00...7.20  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 8,1 D 1  
Edition : 29.11.91  
Replaces : 09.91  
Test oil : ISO-4113

Combination no. : 0 403 446 284

Injection pump  
Pump designation : PES6MW100/72ORS1197  
EP type number : 0 413 406 185  
Governor  
Governor design. : RQV325...1250MW109-1  
K  
Governor no. : 0 420 083 995

Customer-spec. information  
Customer : IVECO-FIAT

Engine : 8060.45.6090

1st version kW : 167.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
(3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 14.50...14.60

Del.quantity cm3/ : 10.5...10.7

100 s: (10.3...10.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0  
Rack travel in mm : 7.7...7.9  
Del.quantity cm3/ : 2.0...2.4  
100 s: (1.7...2.6)  
Spread cm3 : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1400  
travel mm : 10.00...10.40  
2nd speed rpm : 825  
travel mm : 4.90...5.10  
3rd speed rpm : 400  
travel mm : 2.90...3.50  
4th speed rpm : 325  
travel mm : 1.50...1.90

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1250  
Aneroid pressure h: 1200  
Del.quantity : 105.0...107.0  
1000 : (103.0...109.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version

Control Lever  
position degrees: 116...124

Testing:

1st rack travel in: 13.50  
Speed rpm : 1310...1320  
2nd rack travel in: 4.00  
Speed rpm : 1445...1475  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 76...84  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 7.8

Testing:

Speed rpm : 200  
Minimum rack travel: 9.50  
Speed rpm : 325  
Rack travel in mm : 7.70...7.90

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 1100  
Rack travel in m: 14.20...14.40  
3rd speed rpm : 900  
Rack travel in m: 13.60...13.80  
4th speed rpm : 700  
Rack travel in m: 13.50...13.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.20...11.30

Measurement

Speed 1/min : 500

1st pressure hPa : 450  
Rack travel in m: 11.70...11.80  
2nd pressure hPa : 700  
Rack travel in m: 12.80...13.10  
3rd pressure hPa : 1000  
Rack travel in m: 13.50...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 1100  
Del.quantity cm3/ : 108.0...111.0  
1000 s: (105.5...113.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 67.0...69.0  
1000 s: (65.0...71.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.50  
Speed rpm : 1310...1320

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 40.0...60.0  
1000 s: (37.0...63.0)

LOW IDLE

Speed rpm : 325  
Rack travel in mm : 7.70...7.90  
Del.quantity cm3/ : 20.0...24.0  
1000 s: (17.5...26.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 4,5 Q  
Edition : 29.11.91  
Replaces : 08.91  
Test oil : ISO-4113  
Combination no. : 0 403 446 287  
Injection pump  
Pump designation : PES6MW100/320RS1219  
EP type number : 0 413 406 209  
Governor  
Governor design. : RQV350...1100MW118  
Governor no. : 0 420 083 249

Customer-spec. information  
Customer : VME

Engine : TD 61 GB

1st version kW : 115.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
: (2.95...3.15)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.40...11.50

Del.quantity cm3/ : 10.9...11.1

100 s: (10.7...11.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1200

travel mm : 9.00...9.40

2nd speed rpm : 1150

travel mm : 8.70...8.90

3rd speed rpm : 725

travel mm : 3.70...4.30

4th speed rpm : 350

travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1000

Del.quantity : 109.0...111.0

1000 : (107.0...113.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 102...110

Testing:

1st rack travel in: 10.40

Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.10...1.00

#### LOW IDLE 1

Control Lever  
position degrees: 68...76  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 350  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 460...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.40...11.40  
2nd speed rpm : 700  
Rack travel in m: 12.30...12.40  
3rd speed rpm : 900  
Rack travel in m: 11.90...12.20

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 700  
Pressure hPa : 450  
Rack travel mm : 11.80...11.90

#### Measurement

Speed 1/min : 700

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 230  
Rack travel in m: 11.00...11.30  
3rd pressure hPa : 1000  
Rack travel in m: 12.30...12.40

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 700

Del.quantity cm3/ : 120.5...123.5  
1000 s: (118.0...126.0)  
Spread cm3 : 3.50  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm3/ : 82.0...84.0  
1000 s: (80.0...86.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 100

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 90.0...110.0  
1000 s: (87.0...113.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,1 B 7  
 Edition : 23.10.91  
 Replaces : 09.91  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 292  
 Injection pump  
 Pump designation : PES6MW100/720RS1131-  
 1  
 EP type number : 0 413 406 165  
 Governor  
 Governor design. : RQV300...1300MW123  
 Governor no. : 0 420 083 255

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 170.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 14.40...14.50

Del.quantity cm<sup>3</sup>/ : 11.4...11.6

100 s: (11.2...11.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del.quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...9.80

2nd speed rpm : 1350

travel mm : 8.40...8.60

3rd speed rpm : 600

travel mm : 3.70...4.30

4th speed rpm : 300

travel mm : 0.80...1.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 114.0...116.0

1000 : (112.0...118.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 110...118

Testing:  
1st rack travel in: 13.40  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1480...1510  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 440...500

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.70...10.80

Measurement  
Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 11.50...11.70  
2nd pressure hPa : 400  
Rack travel in m: 13.30...13.50  
3rd pressure hPa : 1000  
Rack travel in m: 14.40...14.50

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 750  
Del.quantity cm3/ : 106.5...109.5  
1000 s: (104.0...112.0)

Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 41.0...43.0  
1000 s: (39.0...45.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.40  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm3/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,1 B 8  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 294  
 Injection pump  
 Pump designation : PES6MW100/72ORS1131-  
 1  
 EP type number : 0 413 406 165  
 Governor  
 Governor design. : RQV300...1100MW67-4  
 Governor no. : 0 420 083 261

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM366LA

1st version kW : 162.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 11.2...11.4

100 s: (11.0...11.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.1...6.3

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
 travel mm : 8.40...8.80

2nd speed rpm : 880  
 travel mm : 4.90...5.10

3rd speed rpm : 500  
 travel mm : 2.70...3.30

4th speed rpm : 300  
 travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1000

Del.quantity : 112.0...114.0

1000 : (110.0...116.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 118...126

Testing:  
1st rack travel in: 12.60  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1285...1315  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 78...86  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 6.10...6.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.80...9.90

Measurement  
Speed 1/min : 500

1st pressure hPa : 400  
Rack travel in m: 10.60...10.80  
2nd pressure hPa : 600  
Rack travel in m: 12.80...13.00  
3rd pressure hPa : 1000  
Rack travel in m: 13.60...13.80

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm3/ : 104.5...107.5  
1000 s: (102.0...110.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 35.0...37.0  
1000 s: (33.0...39.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.60  
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.10...6.30  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,1 B 9  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 295  
 Injection pump  
 Pump designation : PES6MW100/720RS1131-  
 1  
 EP type number : 0 413 406 165  
 Governor  
 Governor design. : RQV300...1300MW67-5  
 Governor no. : 0 420 083 262

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 155.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.10...13.20

Del.quantity cm<sup>3</sup>/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.40...8.80

2nd speed rpm : 880

travel mm : 4.90...5.10

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.60

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 118...126

Testing:  
1st rack travel in: 12.10  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1450...1480  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 80...88  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.9

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.50  
Speed rpm : 350  
Rack travel in mm : 5.80...6.00

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.10...10.20

Measurement  
Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 11.20...11.30  
2nd pressure hPa : 350  
Rack travel in m: 13.10...13.20

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 85.0...88.0  
1000 s: (82.5...90.5)

Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 35.0...37.0  
1000 s: (33.0...39.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...110.0  
1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.00)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,7 A 4  
Edition : 29.11.91  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 403 446 296

Injection pump  
Pump designation : PES6MW100/320RS1204  
EP type number : 0 413 406 192  
Governor  
Governor design. : RQV350...1350MW46-42  
Governor no. : 0 420 083 263

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-360

1st version kW : 142.0  
Rated speed : 2700

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35  
: (3.20...3.40)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.60...10.70

Del.quantity cm3/ : 10.9...11.1

100 s: (10.7...11.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 8.20...8.60

2nd speed rpm : 1350

travel mm : 7.40...7.60

3rd speed rpm : 500

travel mm : 2.50...3.10

4th speed rpm : 350

travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 109.5...111.5

1000 : (107.5...113.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control Lever  
position degrees: 104...112

Testing:

1st rack travel in: 9.60  
Speed rpm : 1415...1435  
2nd rack travel in: 4.00  
Speed rpm : 1510...1520  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.3

Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.30...8.40

Measurement

Speed 1/min : 500

1st pressure hPa : 195  
Rack travel in m: 8.90...9.00  
2nd pressure hPa : 345  
Rack travel in m: 10.00...10.40  
3rd pressure hPa : 900  
Rack travel in m: 10.60...10.70

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 1350  
Del.quantity cm3/ : 105.0...109.0  
1000 s: (103.0...111.0)

Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 62.5...64.5  
1000 s: (60.5...66.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1415...1435

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 13.00...14.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

: IHC #1818797C91  
Only perform pump setting with original  
overflow valve without IH hose and  
restrictor 1.2 mm diameter.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,7 A 5  
 Edition : 29.11.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 297  
 Injection pump  
 Pump designation : PES6MW100/32ORS1204  
 EP type number : 0 413 406 192  
 Governor  
 Governor design. : RQV350...1350MW46-43  
 Governor no. : 0 420 083 264

Customer-spec. information  
 Customer : NAVISTAR

Engine : DTA-366

1st version kW : 127.0  
 Rated speed : 2700

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35  
 : (3.20...3.40)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 10.50...10.60

Del.quantity cm3/ : 10.7...10.9

100 s: (10.5...11.1)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.4

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1450  
 travel mm : 8.20...8.60

2nd speed rpm : 1350  
 travel mm : 7.40...7.60

3rd speed rpm : 500  
 travel mm : 2.50...3.10

4th speed rpm : 350  
 travel mm : 1.30...1.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 107.5...109.5

1000 : (105.5...111.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 102...110

Testing:  
1st rack travel in: 9.80  
Speed rpm : 1420...1440  
2nd rack travel in: 4.00  
Speed rpm : 1520...1530  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION  
Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 8.40...8.50

Measurement  
Speed 1/min : 500

1st pressure hPa : 180  
Rack travel in m: 8.90...9.00  
2nd pressure hPa : 330  
Rack travel in m: 9.80...10.20  
3rd pressure hPa : 900  
Rack travel in m: 10.50...10.60

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1350  
Del.quantity cm<sup>3</sup>/ : 103.5...107.5  
1000 s: (101.5...109.5)

Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 61.5...63.5  
1000 s: (59.5...65.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1420...1440

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 13.00...14.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.20...5.40  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

: IHC #1819724C91  
Only perform pump setting with original  
overflow valve without IH hose and  
restrictor 1.2 mm diameter.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 7,2 V  
Edition : 29.11.91  
Replaces : 06.91  
Test oil : ISO-4113

Combination no. : 0 403 456 110

Injection pump  
Pump designation : PES6MW100/321RS1201  
EP type number : 0 413 406 190  
Governor  
Governor design. : RQ250/1200MW84-3  
Governor no. : 0 420 082 043

Customer-spec. information  
Customer : MAN

Engine : D 0826 LF02

1st version kW : 169.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 15.00...0.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 12.80...12.90

Del.quantity cm3/ : 14.1...14.3

100 s: (13.9...14.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1300

travel mm : 8.40...8.80

2nd speed rpm : 1260

travel mm : 6.60...6.80

3rd speed rpm : 345

travel mm : 4.00...4.60

4th speed rpm : 250

travel mm : 1.80...2.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: 107

Speed rpm : 600

Rack travel in mm : 18.20...19.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 1000

Del.quantity : 141.0...143.0

1000 : (139.0...145.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 92...100

Setting point:  
Speed rpm : 600  
Rack travel in mm : 19.0

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1245...1260  
2nd rack travel in: 4.00  
Speed rpm : 1300...1330  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 69...77  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 250  
Rack travel in mm : 5.40...5.60

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 800  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 600  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 1000  
Rack travel in m: 12.50...12.60  
4th speed rpm : 1200  
Rack travel in m: 12.20...12.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 155  
Rack travel mm : 10.30...10.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.00...10.10  
2nd pressure hPa : 550  
Rack travel in m: 11.90...12.20  
3rd pressure hPa : 1000

K12

Rack travel in m: 12.70...12.90

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 139.5...142.5  
1000 s: (137.0...145.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 74.0...76.0  
1000 s: (72.0...78.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.30  
Speed rpm : 1245...1260

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 60.0...80.0  
1000 s: (57.0...83.0)

## LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:  
: MAN #3-7035

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 7,3 D 2  
Edition : 23.10.91  
Replaces : 08.91  
Test oil : ISO-4113

Combination no. : 0 403 456 117

Injection pump  
Pump designation : PES6MW100/321RS1215  
EP type number : 0 413 406 205  
Governor  
Governor design. : RGV250...1200MW83-2  
Governor no. : 0 420 083 216

Customer-spec. information  
Customer : MAN

Engine : D 0826 LF 04

1st version kW : 199.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 16.3...16.5

100 s: (16.1...16.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.1

Del.quantity cm3/ : 2.1...2.5

100 s: (1.8...2.7)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1250  
travel mm : 10.60...11.00

2nd speed rpm : 800  
travel mm : 5.90...6.10

3rd speed rpm : 450  
travel mm : 3.20...3.80

4th speed rpm : 250  
travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1200

Del.quantity : 163.0...165.0

1000 : (161.0...167.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 124...132

Testing:  
1st rack travel in: 12.60  
Speed rpm : 1250...1260  
2nd rack travel in: 4.00  
Speed rpm : 1340...1370  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.0

Testing:  
Speed rpm : 150  
Minimum rack trave: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.90...6.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 200  
Rack travel mm : 10.00...10.10

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.70...9.80  
2nd pressure hPa : 700  
Rack travel in m: 12.30...12.60  
3rd pressure hPa : 1200  
Rack travel in m: 13.60...13.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 600  
Del.quantity cm3/ : 167.0...170.0  
1000 s: (164.5...172.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 77.0...79.0  
1000 s: (75.0...81.0)

#### BREAKAWAY

1st version

K14

1mm rack travel less than

full load rack tr: 12.60  
Speed rpm : 1250...1260

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 70.0...90.0  
1000 s: (67.0...93.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 21.0...25.0  
1000 s: (18.5...27.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:  
: MAN #3-7138

Setting and blocking of pointer of  
start-of-delivery sensor on cyl. 1  
start of delivery



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 4,0 H 6  
 Edition : 29.11.91  
 Replaces : 07.91  
 Test oil : ISO-4113  
 Combination no. : 0 403 474 018  
 Injection pump  
 Pump designation : PES4MW100/720RS1151  
 EP type number : 0 413 404 104  
 Governor  
 Governor design. : RSV350...1300MWA346  
 -2  
 Governor no. : 0 420 085 177

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM364A

1st version kW : 79.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 8.2...8.4

100 s: (8.0...8.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.0...6.8

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 82.0...84.0

1000 : (80.0...86.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 106...114

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.80  
Speed rpm : 1340...1345 \*  
2nd rack travel in: 4.00  
Speed rpm : 1380...1393  
3rd rack travel in: 4.00  
Speed rpm : 1410...1440  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70  
5th rack travel in: 1340...1350  
Speed rpm : 9.80

#### LOW IDLE 1

##### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Rack travel in mm : 2.00  
Speed rpm : 420...500

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 600  
Rack travel in m: 11.70...11.80  
3rd speed rpm : 1000  
Rack travel in m: 11.70...11.80  
4th speed rpm : 1175  
Rack travel in m: 11.00...11.30

#### Aneroid/Altitude Compensator Test

##### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.80...9.90

##### Measurement

Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 300  
Rack travel in m: 11.20...11.40  
3rd pressure hPa : 700  
Rack travel in m: 11.70...11.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 75.0...78.0  
1000 s: (72.5...80.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 46.0...48.0  
1000 s: (44.0...50.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.80

Speed rpm : 1340...1345

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.00...6.80  
Del.quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

:

\* Read off speed set under 1.  
Add 40...53 min<sup>-1</sup> to this speed. The  
control-rod travel under 2. must be  
attained with the calculated speed  
profile.

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 4,0 I 4  
Edition : 23.10.91  
Replaces : 09.91  
Test oil : ISO-4113

Combination no. : 0 403 474 020

Injection pump  
Pump designation : PES4MM100/720RS1212  
EP type number : 0 413 404 114  
Governor  
Governor design. : RSV350...1200MWOA346  
-4

Governer no. : 0 420 085 180

Customer-spec. information  
Customer : MB-NFZ

Engine : OM 364 LA

1st version kW : 99.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.0...6.8

Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 100...108

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.5  
Speed rpm : 1240...1245 \*  
2nd rack travel in: 4.00  
Speed rpm : 1285...1298  
3rd rack travel in: 4.00  
Speed rpm : 1325...1355  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70  
5th rack travel in: 1240...1255  
Speed rpm : 12.50

#### LOW IDLE 1

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.70...10.80

Measurement  
Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 11.90...12.00  
2nd pressure hPa : 375  
Rack travel in m: 12.90...13.20  
3rd pressure hPa : 700  
Rack travel in m: 13.50...13.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 87.0...90.0  
1000 s: (84.5...92.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 40.0...42.0  
1000 s: (38.0...44.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack travel: 12.50  
Speed rpm : 1240...1245

K18

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 85.0...95.0  
1000 s: (82.0...98.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.00...6.80  
Del. quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (7.5...16.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

\* Read off speed set under 1.  
Add 45...53 min<sup>-1</sup> to this speed. The  
control-rod travel under 2. must be  
attained with the calculated speed  
profile.

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.  
Test hydr. locking device for starting  
with 500...1000 hPa air pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 H 1  
 Edition : 27.05.91  
 Replaces : 04.91  
 Test oil : ISO-4113

Combination no. : 0 403 476 080

Injection pump  
 Pump designation : PES6MW100/720RS1191  
 EP type number : 0 413 406 179  
 Governor  
 Governor design. : RSV350...1300MWOA329  
 -6  
 Governor no. : 0 420 085 136

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 170.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 11.2...11.4  
 100 s: (11.0...11.6)

Spread cm3 : 0.3  
 100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 6.0...6.2  
 Del.quantity cm3/ : 0.9...1.3  
 100 s: (0.6...1.5)

Spread cm3 : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3

Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1280  
 Aneroid pressure h: 1000  
 Del.quantity : 112.0...114.0  
 1000 : (110.0...116.0)

Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 105...113

Setting point:  
 Speed rpm : 800  
 Rack travel in mm : 0.6

Testing:  
 1st rack travel in: 13.00  
 Speed rpm : 1336...1340 \*  
 2nd rack travel in: 4.00

Speed rpm : 1410...1428  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 75...83  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 6.00...6.20

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.10...10.20

##### Measurement

Speed 1/min : 500

1st pressure hPa : 350  
Rack travel in m: 11.30...11.40  
2nd pressure hPa : 500  
Rack travel in m: 12.40...12.70  
3rd pressure hPa : 1000  
Rack travel in m: 14.00...14.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 101.0...104.0  
1000 s: (98.5...106.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 35.0...37.0  
1000 s: (33.0...39.0)

#### BREAKAWAY

1st version

K20

1mm rack travel less than

full load rack tr: 13.00  
Speed rpm : 1330...1340

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...110.0  
1000 s: (97.0...113.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.00...6.20  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.00)

#### Remarks:

\* Read off speed set under 1.  
Add 80...88 min<sup>-1</sup> to this speed. The  
control-rod travel under 2. must be  
attained with the calculated speed  
profile.

Test hydr. locking device for starting  
with 500...1000 hPa air pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 92  
Edition : 08.10.91  
Replaces : 07.91  
Test oil : ISO-4113

Combination no. : 0 403 476 088

Injection pump  
Pump designation : PES6MW100/720RS1144  
EP type number : 0 413 406 138  
Governor  
Governor design. : RSV350...1300MWOA341  
-1  
Governor no. : 0 420 085 146

Customer-spec. information  
Customer : MB-NFZ

Engine : OM366A

1st version kW : 125.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.70...10.80

Del.quantity cm3/ : 7.2...7.4

100 s: (7.0...7.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.0...7.6

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 72.0...74.0

1000 : (70.0...76.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 100...108

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.70

Speed rpm : 1340...1345 \*  
2nd rack travel in: 4.00  
Speed rpm : 1380...1393  
3rd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1500  
Speed rpm : 0.30...1.70  
5th rack travel in: 1345...1360  
Speed rpm : 9.70

#### LOW IDLE 1

##### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Rack travel in mm : 2.00  
Speed rpm : 445...505

##### TORQUE CONTROL

Dimension a mm : 1.30  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 10.70...10.80  
2nd speed rpm : 700  
Rack travel in m: 11.90...12.00  
3rd speed rpm : 825  
Rack travel in m: 11.60...11.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 69.0...71.0  
1000 s: (67.0...73.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Speed rpm : 825  
Del.quantity cm<sup>3</sup>/ : 73.0...76.0  
1000 s: (70.5...78.5)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.70  
Speed rpm : 1340...1345

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)

#### LOW IDLE

Speed rpm : 350

Rack travel in mm : 7.00...7.60  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

:

\* Read off speed set under 1.  
Add 40...48 min<sup>-1</sup> to this speed. The  
control-rod travel under 2. must be  
attained with the calculated speed  
profile.

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 93  
Edition : 08.10.91  
Replaces : 07.91  
Test oil : ISO-4113

Combination no. : 0 403 476 089

Injection pump  
Pump designation : PES6MW100/72ORS1144  
EP type number : 0 413 406 138  
Governor  
Governor design. : RSV350...1200MWOA341  
-2  
Governor no. : 0 420 085 147

Customer-spec. information  
Customer : MB-NFZ

Engine : OM366A

1st version kW : 115.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 8.0...8.2

100 s: (7.8...8.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.0...7.6

Del.quantity cm3/ : 0.9...1.1

100 s: (0.6...1.4)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 80.5...82.5

1000 : (78.5...84.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 99...107

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.00

Speed rpm : 1240...1245 \*  
2nd rack travel in: 4.00  
Speed rpm : 1285...1298  
3rd rack travel in: 4.00  
Speed rpm : 1325...1355  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70  
5th rack travel in: 1240...1255  
Speed rpm : 11.00

#### LOW IDLE 1

##### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Rack travel in mm : 2.00  
Speed rpm : 445...505

#### TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 750  
Rack travel in m: 12.50...12.60  
3rd speed rpm : 1000  
Rack travel in m: 12.10...12.30

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 74.5...76.5  
1000 s: (72.5...78.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1240...1245

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.00...7.60

Del.quantity cm<sup>3</sup>/ : 9.0...11.0  
1000 s: (6.0...14.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

\* Read off speed set under 1.  
Add 45...53 min<sup>-1</sup> to this speed. The  
control-rod travel under 2. must be  
attained with the calculated speed  
profile.

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 94  
 Edition : 08.10.91  
 Replaces : 07.91  
 Test oil : ISO-4113  
 Combination no. : 0 403 476 090  
 Injection pump  
 Pump designation : PES6MW100/720RS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RSV350...1200MW1A341  
 -3  
 Governor no. : 0 420 085 148

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM366A

1st version kW : 92.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.80...9.90

Del.quantity cm<sup>3</sup>/ : 6.2...6.4

100 s: (6.0...6.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 7.0...7.6  
 Del.quantity cm<sup>3</sup>/ : 0.9...1.3  
 100 s: (0.6...1.5)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 62.0...64.0

1000 : (60.0...66.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 98...106

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 8.80

Speed rpm : 1235...1240 \*  
2nd rack travel in: 4.00  
Speed rpm : 1270...1283  
3rd rack travel in: 4.00  
Speed rpm : 1300...1330  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70  
5th rack travel in: 1245...1260  
Speed rpm : 8.80

#### LOW IDLE 1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Rack travel in mm : 2.00  
Speed rpm : 415...475

#### TORQUE CONTROL

Dimension a mm : 0.70  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 9.80...9.90  
2nd speed rpm : 800  
Rack travel in m: 10.50...10.60  
3rd speed rpm : 950  
Rack travel in m: 10.10...10.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 60.5...63.5  
1000 s: (58.0...66.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 8.80  
Speed rpm : 1235...1240

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.00...7.60  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (6.5...15.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

\* Read off speed set under 1.  
Add 35...43 min<sup>-1</sup> to this speed. The  
control-rod travel under 2. must be  
attained with the calculated speed  
profile.

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 95  
 Edition : 08.10.91  
 Replaces : 07.91  
 Test oil : ISO-4113  
 Combination no. : 0 403 476 091  
 Injection pump  
 Pump designation : PES6MM100/720RS1131  
 EP type number : 0 413 406 123  
 Governor  
 Governor design. : RSV350...1300MWA342  
 Governor no. : 0 420 085 149

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 150.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 12.60...12.70

Del.quantity cm<sup>3</sup>/ : 10.0...10.2

100 s: (9.8...10.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.9

Del.quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 100.0...102.0

1000 : (98.0...104.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 90...98

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.60

Speed rpm : 1340...1345 \*  
2nd rack travel in: 4.00  
Speed rpm : 1387...1400  
3rd rack travel in: 4.00  
Speed rpm : 1420...1450  
4th rack travel in: 1600  
Speed rpm : 0.30...1.70  
5th rack travel in: 1345...1355  
Speed rpm : 11.60

#### LOW IDLE 1

##### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Rack travel in mm : 2.00  
Speed rpm : 420...480

#### Aneroid/Altitude Compensator Test

##### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.70...10.80

##### Measurement

Speed 1/min : 500

1st pressure hPa : 250  
Rack travel in m: 11.30...11.40  
2nd pressure hPa : 400  
Rack travel in m: 12.10...12.40  
3rd pressure hPa : 1000  
Rack travel in m: 12.60...12.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1000  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 86.5...89.5  
1000 s: (84.0...92.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 53.0...55.0  
1000 s: (51.0...57.0)

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 11.60  
Speed rpm : 1240...1345

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 83.0...93.0  
1000 s: (80.0...96.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.20...6.90  
Del. quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

\* Read off speed set under 1.  
Add 47...55 min<sup>-1</sup> to this speed. The  
control-rod travel under 2. must be  
attained with the calculated speed  
profile.

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.  
Test hydr. locking device for starting  
with 500...1000 hPa air pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 H 3  
Edition : 27.05.91  
Replaces : 31.08.90  
Test oil : ISO-4113

Combination no. : 0 403 476 093

Injection pump  
Pump designation : PES6MW100/720RS1191  
EP type number : 0 413 406 179  
Governor  
Governor design. : RSV350...1300MWOA329  
-9  
Governor no. : 0 420 085 151

Customer-spec. information  
Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 155.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 1000

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 105...113

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.00

Speed rpm : 1330...1340 \*

2nd rack travel in: 4.00

Speed rpm : 1410...1428  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control Lever  
position degrees: 75...83  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.30...5.50

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.00...9.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 10.60...10.70  
2nd pressure hPa : 380  
Rack travel in m: 11.20...11.50  
3rd pressure hPa : 1000  
Rack travel in m: 12.00...12.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 85.0...88.0  
1000 s: (82.5...90.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 35.0...37.0  
1000 s: (33.0...39.0)

#### BREAKAWAY

##### 1st version

L02

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1330...1340

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 11.00  
Speed rpm : 1330...1335

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 100.0...110.0  
1000 s: (97.0...113.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.30...5.50  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: 35...1240.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.00)

#### Remarks:

:  
Test hydr. locking device for starting  
with 500...1000 hPa air pressure.

\* Read off speed set under 1.  
Add 80...88 min<sup>-1</sup> to this speed. The  
control-rod travel under 2. must be  
attained with the calculated speed  
profile.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,1 B 2  
Edition : 18.09.91  
Replaces : 02.91  
Test oil : ISO-4113

Combination no. : 0 403 476 100

Injection pump  
Pump designation : PES6MW100/720RS1131-  
1

EP type number : 0 413 406 165  
Governor  
Governor design. : RSV350...1300MWOA342  
-3

Governer no. : 0 420 085 162

Customer-spec. information  
Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 157.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
: (3.55...3.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 13.20...13.30

Del.quantity cm3/ : 10.2...10.4

100 s: (10.0...10.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 5.7...6.3  
Del.quantity cm3/ : 1.0...1.2  
100 s: (0.6...1.5)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 1000

Del.quantity : 102.0...104.0

1000 : (100.0...106.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 97...105

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

### Testing:

1st rack travel in: 12.20  
Speed rpm : 1340...1345 \*  
2nd rack travel in: 4.00  
Speed rpm : 1390...1403  
3rd rack travel in: 4.00  
Speed rpm : 1420...1450  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70  
5th rack travel in: 1340...1350  
Speed rpm : 12.20

### LOW IDLE 1

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Rack travel in mm : 2.00  
Speed rpm : 410...470

#### Aneroid/Altitude Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.80...9.90

##### Measurement

Speed 1/min : 500

1st pressure hPa : 190  
Rack travel in m: 11.00...11.10  
2nd pressure hPa : 350  
Rack travel in m: 12.30...12.60  
3rd pressure hPa : 1000  
Rack travel in m: 13.20...13.30

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 89.0...92.0  
1000 s: (86.5...94.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 36.0...38.0  
1000 s: (34.0...40.0)

### BREAKAWAY

#### 1st version

L04

1mm rack travel less than

full load rack tr: 12.20  
Speed rpm : 1340...1345

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 95.0...105.0  
1000 s: (92.0...108.0)

### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.70...6.30  
Del.quantity cm<sup>3</sup>/ : 10.0...12.0  
1000 s: (6.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

### Remarks:

\* Read off speed set under 1.  
Add 50...58 min<sup>-1</sup> to this speed. The  
control-rod travel under 2. must be  
attained with the calculated speed  
profile.

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.  
Test hydr. locking device for starting  
with 500...1000 hPa air pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,1 D 8  
Edition : 29.11.91  
Replaces : 07.91  
Test oil : ISO-4113  
Combination no. : 0 403 476 107  
Injection pump  
Pump designation : PES6MW100/720RS1131  
EP type number : 0 413 406 123  
Governor  
Governor design. : RSV350...1300MWOA342  
-5  
Governor no. : 0 420 085 172  
Customer-spec. information  
Customer : MB-NFZ  
Engine : OM 366 A  
1st version kW : 122.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 419 992 198  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 0 681 343 009  
Opening  
pressure, bar : 172...175  
Test lines : 1 680 750 015  
Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32  
Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300  
Rack travel in mm : 10.90...11.00  
Del.quantity cm3/ : 8.4...8.6  
100 s: (8.2...8.8)  
Spread cm3 : 0.3  
100 s: (0.6)  
2nd speed rpm : 350.0  
Rack travel in mm : 5.8...6.5  
Del.quantity cm3/ : 0.9...1.3  
100 s: (0.6...1.5)  
Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 5.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1300  
Aneroid pressure h: 750  
Del.quantity : 84.0...86.0  
1000 : (82.0...88.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 110...118

Setting point:  
Speed rpm : 800  
Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.90  
Speed rpm : 1340...1345 \*  
2nd rack travel in: 4.00  
Speed rpm : 1380...1393  
3rd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70  
5th rack travel in: 1345...1360  
Speed rpm : 9.90

#### LOW IDLE 1

##### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Rack travel in mm : 2.00  
Speed rpm : 420...500

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1300  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 600  
Rack travel in m: 11.80...11.90  
3rd speed rpm : 1100  
Rack travel in m: 11.00...11.20

#### Aneroid/Altitude Compensator Test

##### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.80...9.90

##### Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 400  
Rack travel in m: 11.30...11.50  
3rd pressure hPa : 750  
Rack travel in m: 11.80...11.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 750  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 78.0...81.0  
1000 s: (75.5...83.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 47.0...49.0  
1000 s: (45.0...51.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1340...1345

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 83.0...93.0  
1000 s: (80.0...96.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.80...6.50  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

:

\* Read off speed set under 1.  
Add 40...48 min<sup>-1</sup> to this speed. The  
control-rod travel under 2. must be  
attained with the calculated speed  
profile.

Set pneumatic shutoff device to  
control-rod stop = 0.5...1.5 mm  
control-rod travel at 4.5 bar  
atmospheric pressure.

Test hydr. locking device for starting  
with 500...1000 hPa air pressure.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,1 B 5  
 Edition : 27.09.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 476 109  
 Injection pump  
 Pump designation : PES6MW100/720RS1131-  
 1  
 EP type number : 0 413 406 165  
 Governor  
 Governor design. : RSV350...1300MWOA329-  
 10  
 Governor no. : 0 420 085 178

Customer-spec. information  
 Customer : MB-NFZ

Engine : OM 366 LA

1st version kW : 155.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70  
 : (3.55...3.75)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 13.10...13.20

Del.quantity cm3/ : 9.8...10.0

100 s: (9.6...10.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.0

Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Aneroid pressure h: 1000

Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 105...113

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.0

Speed rpm : 1330...1335 \*  
2nd rack travel in: 4.00  
Speed rpm : 1410...1423  
4th rack travel in: 1550  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.9

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.80...6.00

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.10...10.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : 350  
Rack travel in m: 11.00...11.10  
2nd pressure hPa : 550  
Rack travel in m: 12.40...12.70  
3rd pressure hPa : 1000  
Rack travel in m: 13.10...13.20

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm3/ : 85.0...88.0  
1000 s: (82.5...90.5)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 35.0...37.0  
1000 s: (33.0...39.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1330...1335

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...110.0  
1000 s: (97.0...113.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.80...6.00  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm3 : 3.50  
1000 s: (5.00)

#### Remarks:

Test hydr. locking device for starting  
with 500...1000 hPa air pressure.

\* Read off speed set under 1.  
Add 80...88 min<sup>-1</sup> to this speed. The  
control-rod travel under 2. must be  
attained with the calculated speed  
profile.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,7 C  
Edition : 22.11.91  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 403 476 111

Injection pump  
Pump designation : PES6MW100/320RS1198-  
1  
EP type number : 0 413 406 211  
Governor  
Governor design. : RSV350...1250MW2A347  
Governor no. : 0 420 085 182

Customer-spec. information  
Customer : NAVISTAR

Engine : DT-466

1st version kW : 156.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 038

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

L09

Prestroke mm : 3.25...3.35  
: (3.20...3.40)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.60...11.70

Del.quantity cm3/ : 12.3...12.5

100 s: (12.1...12.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0  
Rack travel in mm : 5.1...5.3  
Del.quantity cm3/ : 1.5...1.9  
100 s: (1.3...2.2)

Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 900

Del.quantity : 123.0...125.0

1000 : (121.0...127.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 94...102

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.60  
Speed rpm : 1290...1300

2nd rack travel in: 4.00  
Speed rpm : 1350...1360

3rd rack travel in: 4.00  
Speed rpm : 1340...1370

4th rack travel in: 1450  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 64...72

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 5.2

Testing:

Speed rpm : 100

Minimum rack travel: 19.00

Speed rpm : 350

Rack travel in mm : 5.10...5.30

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : -

Rack travel mm : 9.40...9.50

Measurement

Speed 1/min : 500

1st pressure hPa : 265

Rack travel in m: 10.00...10.10

2nd pressure hPa : 455

Rack travel in m: 10.80...11.20

3rd pressure hPa : 900

Rack travel in m: 11.60...11.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm<sup>3</sup>/ : 79.5...83.5

1000 s: (77.5...85.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 160.0...180.0

1000 s: (155.0...185.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.10...5.30

Del.quantity cm<sup>3</sup>/ : 15.5...19.5

1000 s: (13.0...22.0)

Spread cm<sup>3</sup> : 3.50

1000 s: (5.00)

Remarks:

: IHC #1818555C91



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 7,3 B  
Edition : 20.09.91  
Replaces : 11.90  
Test oil : ISO-4113

Combination no. : 0 403 486 103

Injection pump  
Pump designation : PES6MM100/321RS1208  
EP type number : 0 413 406 199  
Governor  
Governor design. : RSV300...1050MWA802  
-2

Governer no. : 0 420 085 156

Customer-spec. information  
Customer : MAN

Engine : D0826LE 10

1st version kW : 165.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
: (3.45...3.65)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.00...14.10

Del.quantity cm3/ : 14.0...14.2

100 s: (13.8...14.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0  
Rack travel in mm : 5.0...5.2  
Del.quantity cm3/ : 1.1...1.5  
100 s: (0.8...1.7)

Spread cm3 : 0.3  
100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Del.quantity : 140.0...142.0  
1000 : (138.0...144.0)  
Spread cm3 : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 111...119

Setting point:  
Speed rpm : 800  
Rack travel in mm : 0.6

Testing:  
1st rack travel in: 13.00

Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 61...69  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.1

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 139.5...142.5  
1000 s: (137.0...145.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Speed rpm : 800  
Del.quantity cm3/ : 145.5...148.5  
1000 s: (143.0...151.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.00  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (127.0...153.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Del.quantity cm3/ : 11.0...15.0  
1000 s: (8.5...17.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

: MAN #3-7103

Start-of-delivery mark is at start of  
delivery of cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 8,7 G  
Edition : 08.10.91  
Replaces : 08.90  
Test oil : ISO-4113

Combination no. : 0 403 546 006

Injection pump  
Pump designation : PE6MW100/72ORS1177  
EP type number : 0 413 506 107  
Governor  
Governor design. : RQ300/125OMW12-1  
Governor no. : 0 420 082 010

Customer-spec. information  
Customer : MB-NFZ

Engine : OM360A

1st version kW : 155.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.80...3.90  
: (3.75...3.95)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 12.40...12.50

Del.quantity cm3/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 8.3...8.4

Del.quantity cm3/ : 1.3...1.7

100 s: (1.1...2.0)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1410  
travel mm : 9.80...10.20

2nd speed rpm : 1310  
travel mm : 7.30...7.50

3rd speed rpm : 420  
travel mm : 5.70...6.30

4th speed rpm : 300  
travel mm : 2.30...2.70

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108

Speed rpm : 650

Rack travel in mm : 13.10...13.90

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 99.5...101.5

1000 : (97.5...103.5)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 99...107

Setting point:

Speed rpm : 650  
Rack travel in mm : 13.5

Testing:

1st rack travel in: 11.40  
Speed rpm : 1295...1310  
2nd rack travel in: 4.00  
Speed rpm : 1395...1425  
4th rack travel in: 1550  
Speed rpm : 0.10...1.00

LOW IDLE 1

Control lever  
position degrees: 74...82  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 8.3

Testing:

Speed rpm : 200  
Minimum rack travel: 10.00  
Speed rpm : 300  
Rack travel in mm : 8.30...8.40  
Rack travel in mm : 2.00  
Speed rpm : 395...435

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 96.5...99.5  
1000 s: (94.0...102.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 1295...1310

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 125.0...135.0  
1000 s: (122.0...138.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 8.30...8.40  
Del.quantity cm<sup>3</sup>/ : 13.5...17.5  
1000 s: (11.0...20.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 13,4D18  
Edition : 20.09.91  
Replaces : 06.91  
Test oil : ISO-4113

Combination no. : 0 403 548 038

Injection pump  
Pump designation : PE8MW100/720LS1128  
EP type number : 0 413 508 103  
Governor  
Governor design. : RQ300/1200MW71-1  
Governor no. : 0 420 082 060

Customer spec. information  
Customer : KHD

Engine : BF8L513

1st version kW : 172.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
: (3.05...3.25)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
4- 3

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200  
Rack travel in mm : 11.90...12.00  
Del.quantity cm<sup>3</sup>/ : 10.7...10.9  
100 s: (10.5...11.1)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.6)

2nd speed rpm : 300.0  
Rack travel in mm : 7.8...8.0  
Del.quantity cm<sup>3</sup>/ : 1.3...1.7  
100 s: (1.0...1.9)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1290  
travel mm : 8.70...9.30  
2nd speed rpm : 1200  
travel mm : 5.90...6.30  
3rd speed rpm : 600  
travel mm : 5.80...6.20  
4th speed rpm : 300  
travel mm : 2.00...2.60

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: 108  
Speed rpm : 650  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Del.quantity : 107.0...109.0  
1000 : (105.0...111.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 90...102

Setting point:  
Speed rpm : 650  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 10.90  
Speed rpm : 1240...1255  
2nd rack travel in: 4.00  
Speed rpm : 1280...1310  
4th rack travel in: 14.00  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 72...80  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.9

Testing:  
Speed rpm : 200  
Minimum rack travel: 9.50  
Speed rpm : 300  
Rack travel in mm : 7.80...8.00

#### START CUT-OUT

Speed 1/min : 220 (250)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.90  
Speed rpm : 1240...1255

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 135.0...155.0  
1000 s: (132.0...158.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...8.00  
Del.quantity cm3/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 13,4 G  
Edition : 23.10.91  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 403 548 039

Injection pump  
Pump designation : PE8MW100/720LS1128-1  
EP type number : 0 413 508 109  
Governor  
Governor design. : RQV300...1150MW56-6  
Governor no. : 0 420 083 254

Customer-spec. information  
Customer : KHD

Engine : BF 8L 513

1st version kW : 225.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
4- 3

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 14.2...14.4

100 s: (14.0...14.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.9...7.1

Del.quantity cm3/ : 1.3...1.7

100 s: (1.1...1.9)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1300  
travel mm : 9.80...10.20

2nd speed rpm : 1220  
travel mm : 8.80...9.00

3rd speed rpm : 600  
travel mm : 3.90...4.50

4th speed rpm : 300  
travel mm : 0.50...0.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1200

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 1000

Del.quantity : 142.0...144.0

1000 : (140.0...146.0)

Spread cm3 : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 118...126

Testing:

1st rack travel in: 11.90  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1290...1320  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 84...92  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.0

Testing:

Speed rpm : 200  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION

Speed rpm : 340...400

TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 700  
Rack travel in m: 13.30...13.50  
3rd speed rpm : 800  
Rack travel in m: 13.00...13.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 660  
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.90...12.00  
2nd pressure hPa : 530  
Rack travel in m: 12.20...12.50  
3rd pressure hPa : 1000  
Rack travel in m: 13.30...13.50

START CUT-OUT

Speed 1/min : 220 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000  
Speed rpm : 700  
Del.quantity cm3/ : 142.5...145.5  
1000 s: (140.0...148.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 450  
Del.quantity cm3/ : 107.0...109.0  
1000 s: (105.0...111.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...150.0  
1000 s: (137.0...153.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.90...7.10  
Del.quantity cm3/ : 13.0...17.0  
1000 s: (11.0...19.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,2 a  
Edition : 29.11.91  
Replaces : 4.86  
Test oil : ISO-4113

Combination no. : 0 405 058 201

Injection pump  
Pump designation : PE8AM90D321RS2014  
EP type number : 0 415 098 204  
Governor  
Governor design. : RQV275...1500AB837R  
Governor no. : 0 420 213 068

Customer spec. information  
Customer : RVI

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 419 992 198

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25  
(2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 3- 6- 5-

Firing order : 4- 2

Phasing : 0-45-90-135-180-225-  
270-315  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.20...10.30

Del. quantity cm<sup>3</sup>/ : 8.7...8.8

100 s: (8.5...9.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.4)

2nd speed rpm : 275.0

Rack travel in mm : 6.6...6.8

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.4...2.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.6)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 275  
travel mm : 0.40...0.80

2nd speed rpm : 390  
travel mm : 1.70...2.20

3rd speed rpm : 440  
travel mm : 2.20...2.70

4th speed rpm : 1000  
travel mm : 3.90...4.40

5th speed rpm : 1610  
travel mm : 8.90...9.40

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1660

Rack travel in mm : 7.90...10.50

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1200

Del. quantity : 87.0...88.0

1000 : (85.0...90.0)

Spread cm<sup>3</sup> : 3.00

1000 : (4.50)

## RATED SPEED

### 1st version

Control lever

position degrees: 118...126

Testing:

1st rack travel in: 9.20

Speed rpm : 1595...1605

2nd rack travel in: 4.00

Speed rpm : 1660...1690

LOW IDLE 1

Control lever

position degrees: 64...72

Testing:

Speed rpm : 100

Minimum rack travel: 8.20

Speed rpm : 275

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

Speed rpm : 325...390

START CUT-OUT

Speed 1/min : 240 (260)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20

Speed rpm : 1595...1605

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 158.0...168.0

1000 s: (155.0...171.0)

Rack travel in mm : 17.50...17.90

Remarks:

:

Start-of-delivery mark cyl. 7

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 b 1  
 Edition : 02.12.91  
 Replaces : 1.9.88  
 Test oil : ISO-4113  
 Combination no. : 9 400 083 451  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 -2  
 EP type number : 9 410 230 028  
 Governor  
 Governor design. : RQV350...1100AB1218R  
 Governor no. : 9 420 080 214

Customer-spec. information  
 Customer : CUMMINS

Engine : 6 CT/8.3 1

1st version kW : 157.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.60...12.70

Del.quantity cm<sup>3</sup>/ : 11.7...11.9

100 s: (11.5...12.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.8...6.0

Del.quantity cm<sup>3</sup>/ : 1.3...1.7

100 s: (1.0...1.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1100

travel mm : 8.40...8.50

2nd speed rpm : 350

travel mm : 2.20...2.60

3rd speed rpm : 500

travel mm : 3.90...4.20

4th speed rpm : 800

travel mm : 5.60...5.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1090

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100  
Aneroid pressure h : 800  
Del.quantity : 117.0...119.0  
1000 : (115.0...121.0)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 114...122

#### Testing:

1st rack travel in: 11.60  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1370  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 67...75

#### Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.80...6.00

#### CONSTANT REGULATION

Speed rpm : 350...500

#### TORQUE CONTROL

Dimension a mm : 1.00  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 700  
Rack travel in m: 13.60...13.70  
3rd speed rpm : 800  
Rack travel in m: 13.30...13.50  
4th speed rpm : 950  
Rack travel in m: 12.80...13.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 800  
Rack travel mm : 13.60...13.70

#### Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 11.90...12.00  
2nd pressure hPa : 600  
Rack travel in m: 13.20...13.30  
3rd pressure hPa : 500  
Rack travel in m: 12.20...12.40

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 800  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 131.5...134.5  
1000 s: (129.0...137.0)  
Aneroid pressure h: 800  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 128.0...131.0  
1000 s: (125.5...133.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 93.5...95.5  
1000 s: (91.5...97.5)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 156.0...186.0  
1000 s: (-)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.80...6.00  
Del.quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (10.5...19.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 b 2  
 Edition : 02.12.91  
 Replaces : 1.9.88  
 Test oil : ISO-4113  
 Combination no. : 9 400 083 452  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 -2  
 EP type number : 9 410 230 028  
 Governor  
 Governor design. : RQV350...1250AB1225R  
 Governor no. : 9 420 080 224

Customer-spec. information  
 Customer : CUMMINS

Engine : 6 C 8.3L

1st version kW : 123.0  
 Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 11.20...11.30

Del.quantity cm<sup>3</sup>/ : 10.3...10.5

100 s: (10.1...10.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.5

Del.quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (1.1...2.0)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1265

travel mm : 8.40...8.60

2nd speed rpm : 900

travel mm : 5.50...6.00

3rd speed rpm : 500

travel mm : 3.70...4.20

4th speed rpm : 350

travel mm : 1.80...2.30

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1250

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250  
Del.quantity : 103.5...105.5  
1000 : (101.5...107.5)  
Spread cm3 : 3.50  
1000 : (6.00)

#### RATED SPEED

1st version  
Control Lever  
position degrees: 113...121

#### Testing:

1st rack travel in: 10.20  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1390...1420  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control Lever  
position degrees: 66...74

#### Testing:

Speed rpm : 100  
Minimum rack travel: 9.80  
Speed rpm : 350  
Rack travel in mm : 5.30...5.50

#### CONSTANT REGULATION

Speed rpm : 390...460

#### TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 500  
Rack travel in m: 11.80...11.90  
3rd speed rpm : 600  
Rack travel in m: 11.50...11.70  
4th speed rpm : 750  
Rack travel in m: 11.30...11.60

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Speed rpm : 500  
Del.quantity cm3/ : 100.5...103.5  
1000 s: (98.0...106.0)  
Speed rpm : 600  
Del.quantity cm3/ : 103.5...106.5  
1000 s: (101.0...109.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 156.0...186.0  
1000 s: (151.0...191.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.30...5.50  
Del.quantity cm3/ : 14.0...18.0  
1000 s: (11.5...20.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MMM 5,9 i 4  
 Edition : 24.10.91  
 Replaces : 16.8.88  
 Test oil : ISO-4113  
 Combination no. : 9 400 085 224  
 Injection pump  
 Pump designation : PES6A90D320RS2605  
 EP type number : 9 400 083 078  
 Governor  
 Governor design. : RSV350...1050A1B2029  
 -2R  
 Governor no. : 9 420 083 182  
 Customer-spec. information  
 Customer : MMM  
 Engine : TD 229-6

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 046  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 003  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
 Prestroke mm : 2.20...2.30  
 : (2.15...2.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 8.20...8.30  
 Del.quantity cm<sup>3</sup>/ : 5.3...5.4  
 100 s: (5.1...5.6)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)  
 2nd speed rpm : 350.0  
 Rack travel in mm : 6.4...6.6  
 Del.quantity cm<sup>3</sup>/ : 0.7...1.1  
 100 s: (0.5...1.3)  
 Spread cm<sup>3</sup> : 0.2  
 100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del.quantity : 53.0...54.0  
 1000 : (51.0...56.0)  
 Spread cm<sup>3</sup> : 3.00  
 1000 : (5.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 53...61

Testing:

1st rack travel in: 7.20  
Speed rpm : 1070...1080  
2nd rack travel in: 4.00  
Speed rpm : 1090...1120  
4th rack travel in: 1250  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 530...590  
Speed rpm : 670  
Maximum rack trave: 1.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 8.20...8.30  
2nd speed rpm : 500  
Rack travel in m: 9.00...9.10  
3rd speed rpm : 700  
Rack travel in m: 8.90...9.10  
4th speed rpm : 875  
Rack travel in m: 8.40...8.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del.quantity cm3/ : 46.0...50.0  
1000 s: (43.5...52.5)  
Speed rpm : 700  
Del.quantity cm3/ : 51.5...53.5  
1000 s: (49.0...56.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 7.20  
Speed rpm : 1070...1080

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.40...6.60  
Del.quantity cm3/ : 7.5...11.5  
1000 s: (5.5...13.5)  
Spread cm3 : 2.50  
1000 s: (4.50)

Remarks:

#### APPLICATION

Tractor (tractor engines)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 3,8 h 2  
 Edition : 24.10.91  
 Replaces : 9.85  
 Test oil : ISO-4113  
 Combination no. : 9 400 085 233  
 Injection pump  
 Pump designation : PES4A90D410RS2294  
 EP type number : 0 410 894 011  
 Governor  
 Governor design. : RSV400...1200A0B2188  
 Governor no. : 9 420 083 187

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 314

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25  
 : (2.10...2.30)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.00...10.10

Del.quantity cm<sup>3</sup>/ : 6.1...6.2

100 s: (5.9...6.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 400.0

Rack travel in mm : 7.1...7.3

Del.quantity cm<sup>3</sup>/ : 1.0...1.4

100 s: (0.8...1.6)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 61.5...62.5

1000 : (59.5...64.5)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 9.00

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1295...1325

4th rack travel in: 1400

Speed rpm : 0.30...1.70

## LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.7

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 7.10...7.30  
Rack travel in mm : 2.00  
Speed rpm : 480...540  
Speed rpm : 700  
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 10.00. .10.10  
2nd speed rpm : 550  
Rack travel in m: 10.00...10.20  
5th speed rpm : 450  
Rack travel in m: 11.60...11.80

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.00  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 14.20...14.80

Remarks:

:

APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 5,9 c  
Edition : 24.10.91  
Replaces : 26.3.90  
Test oil : ISO-4113

Combination no. : 9 400 085 239

Injection pump  
Pump designation : PES6A90D320RS2701  
EP type number : 9 400 083 094  
Governor  
Governor design. : RSV350...1150A2B2097  
-1  
Governor no. : 9 420 083 197

Customer-spec. information  
Customer : MWM

Engine : TD229-6

1st version kW : 106.7  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 046

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75  
: (2.60...2.80)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 8.1...8.2

100 s: (7.9...8.4)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.5

Del.quantity cm3/ : 0.8...1.2

100 s: (0.6...1.4)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 81.0...82.0

1000 : (79.0...84.0)

Spread cm3 : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever  
position degrees: 93...101

Testing:

1st rack travel in: 9.80  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1350  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 67...75  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.9

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.30...5.50  
Rack travel in mm : 2.00  
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.80...10.90  
2nd speed rpm : 500  
Rack travel in m: 11.20...11.30  
3rd speed rpm : 700  
Rack travel in m: 11.20...11.30  
4th speed rpm : 950  
Rack travel in m: 11.00...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 74.5...76.5  
1000 s: (72.0...79.0)  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 77.0...79.0  
1000 s: (74.5...81.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.30...5.50  
Del.quantity cm<sup>3</sup>/ : 8.0...12.0  
1000 s: (6.0...14.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (4.50)

Remarks:

: VALMET

APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 3,9 a  
Edition : 24.10.91  
Replaces : 15.8.89  
Test oil : ISO-4113

Combination no. : 9 400 085 240

Injection pump  
Pump designation : PES4A90D320RS2702  
EP type number : 9 400 083 095  
Governor  
Governor design. : RSV350...1150A2B2129  
-4R  
Governor no. : 9 420 083 193

Customer-spec. information  
Customer : MWM

Engine : D 229-4

1st version kW : 75.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75  
: (2.60...2.80)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.00...9.10

Del.quantity cm3/ : 6.3...6.4

100 s: (6.1...6.6)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del.quantity cm3/ : 1.0...1.4

100 s: (0.8...1.6)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 63.5...64.5

1000 : (61.5...66.5)

Spread cm3 : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever  
position degrees: 95...103

Testing:

1st rack travel in: 8.00  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 70...78  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.2

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 560...620

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 9.00...9.10  
2nd speed rpm : 500  
Rack travel in m: 10.10...10.20  
3rd speed rpm : 800  
Rack travel in m: 9.70...9.90  
4th speed rpm : 1000  
Rack travel in m: 9.10...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 61.0...63.0  
1000 s: (59.5...64.5)  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 66.0...68.0  
1000 s: (63.5...70.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.00  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

Remarks:

: VALMET

APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 2,9 a  
Edition : 24.10.91  
Replaces : 26.3.90  
Test oil : ISO-4113

Combination no. : 9 400 085 241

Injection pump  
Pump designation : PES3A90D320RS2703  
EP type number : 9 400 083 096  
Governor  
Governor design. : RSV350...1150A2B2129  
-4R  
Governor no. : 9 420 083 193

Customer-spec. information  
Customer : MWM

Engine : D 229-3

1st version kW : 42.7  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75  
: (2.60...2.80)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 2- 3

Phasing : 0-120-240

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 8.50...8.60

Del. quantity cm<sup>3</sup>/ : 5.8...5.9  
100 s: (5.6...6.1)

Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

2nd speed rpm : 350.0  
Rack travel in mm : 5.5...5.7  
Del. quantity cm<sup>3</sup>/ : 1.1...1.5  
100 s: (0.9...1.7)  
Spread cm<sup>3</sup> : 0.2  
100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Del. quantity : 58.0...59.0  
1000 : (56.0...61.0)  
Spread cm<sup>3</sup> : 3.00  
1000 : (5.00)

## RATED SPEED

1st version

Control lever  
position degrees: 93...101

Testing:

1st rack travel in: 7.50  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1220...1250  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 73...81  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.1

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 545...605

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 8.50...8.60  
2nd speed rpm : 500  
Rack travel in m: 9.40...9.50  
4th speed rpm : 800  
Rack travel in m: 8.90...9.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm3/ : 54.0...56.0  
1000 s: (51.5...58.5)  
Speed rpm : 800  
Del.quantity cm3/ : 60.5...62.5  
1000 s: (58.0...65.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7.50  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

Remarks:

: VALMET

APPLICATION

Tractor (tractor engines)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 3,9 b 1  
Edition : 02.12.91  
Replaces : 5.85  
Test oil : ISO-4113  
  
Combination no. : 9 400 085 243  
  
Injection pump  
Pump designation : PES4A80D320RS1282-1  
EP type number : 9 400 083 097  
Governor  
Governor design. : RS350/1500A2B2073-2R  
Governor no. : 9 420 083 194

Customer-spec. information  
Customer : MWM

Engine : D 229-4

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75  
: (2.60...2.80)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1500

Rack travel in mm : 9.20...9.30

Del.quantity cm3/ : 5.8...5.9

100 s: (5.6...6.0)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 6.0...6.2

Del.quantity cm3/ : 0.7...1.1

100 s: (0.5...1.2)

Spread cm3 : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1500

Del.quantity : 58.0...59.0

1000 : (56.5...60.5)

Spread cm3 : 2.50

1000 : (4.00)

## RATED SPEED

### 1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 8.20

Speed rpm : 1540...1550  
2nd rack travel in: 4.00  
Speed rpm : 1585...1615  
4th rack travel in: 1700  
Speed rpm : 0.30...1.70

Remarks:

#### LOW IDLE 1

Control lever

position degrees: 28...36

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 6.1

#### Testing:

Speed rpm : 250

Minimum rack trave: 6.80

Speed rpm : 350

Rack travel in mm : 6.00...6.20

Rack travel in mm : 4.00

Speed rpm : 430...490

Speed rpm : 700

Maximum rack trave: 3.50

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1500

Rack travel in m: 9.20...9.30

2nd speed rpm : 500

Rack travel in m: 10.60...10.70

3rd speed rpm : 900

Rack travel in m: 10.20...10.40

4th speed rpm : 1200

Rack travel in m: 9.50...9.80

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500

Del.quantity cm3/ : 58.5...60.5

1000 s: (56.5...62.5)

Speed rpm : 900

Del.quantity cm3/ : 63.0...65.0

1000 s: (61.0...67.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.20

Speed rpm : 1540...1550

#### STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 19.00...21.00

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 3,8 h 1  
Edition : 24.10.91  
Replaces : 9.85  
Test oil : ISO-4113  
Combination no. : 9 400 085 251  
Injection pump  
Pump designation : PES4A90D410RS2294  
EP type number : 0 410 894 011  
Governor  
Governor design. : RSV350...1300A0B1150  
-2L  
Governor no. : 9 420 083 199

Customer-spec. information  
Customer : MERCEDES-BENZ

Engine : OM 314

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25  
: (2.10...2.30)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.00...10.10

Del. quantity cm<sup>3</sup>/ : 6.2...6.3

100 s: (6.0...6.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

2nd speed rpm : 350.0

Rack travel in mm : 7.1...7.3

Del. quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.5)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del. quantity : 62.0...63.0

1000 : (60.0...65.0)

Spread cm<sup>3</sup> : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 9.00

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1390...1420

4th rack travel in: 1500

Speed rpm : 0.30...1.70

## LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.7

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 7.10...7.30  
Rack travel in mm : 2.00  
Speed rpm : 430...500  
Speed rpm : 700  
Maximum rack trave: 1.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 10.00...10.10  
2nd speed rpm : 500  
Rack travel in m: 10.00...10.20  
5th speed rpm : 400  
Rack travel in m: 11.60...11.80

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.00  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 14.20...14.80

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 3,9 b 2  
 Edition : 24.10.91  
 Replaces : 10.85  
 Test oil : ISO-4113  
 Combination no. : 9 400 085 257  
 Injection pump  
 Pump designation : PES4A80D32ORS1282  
 EP type number : 9 400 083 056  
 Governor  
 Governor design. : RSV350...1100A2B2129  
 -6R  
 Governor no. : 9 420 083 206  
 Customer-spec. information  
 Customer : MWM  
 Engine : D 229-4

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
 : (2.15...2.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 8.70...8.80

Del.quantity cm3/ : 4.8...4.9

100 s: (4.7...5.1)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 6.4...6.6

Del.quantity cm3/ : 1.0...1.3

100 s: (0.8...1.4)

Spread cm3 : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 48.5...49.5

1000 : (47.0...51.0)

Spread cm3 : 2.50

1000 : (4.00)

## RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 7.70  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1180...1210  
4th rack travel in: 1300  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 18...25  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.0

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 590...650

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 8.70...8.80  
2nd speed rpm : 500  
Rack travel in m: 10.00...10.10  
4th speed rpm : 900  
Rack travel in m: 9.10...9.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 50.0...52.0  
1000 s: (48.0...54.0)  
Speed rpm : 900  
Del.quantity cm<sup>3</sup>/ : 49.0...51.0  
1000 s: (47.0...53.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 7.70  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

Remarks:

:

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MM 5,9 a 3  
Edition : 24.10.91  
Replaces : 12.85  
Test oil : ISO-4113

Combination no. : 9 400 085 261

Injection pump  
Pump designation : PES6A80D32ORS1271  
EP type number : 9 400 083 058  
Governor  
Governor design. : RSV350...1250A0B2029  
-3  
Governor no. : 9 420 083 208

Customer-spec. information  
Customer : MM

Engine : D 229-6

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 046

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.20...2.30  
: (2.15...2.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 8.20...8.30

Del.quantity cm<sup>3</sup>/ : 4.9...5.0

100 s: (4.8...5.2)

Spread cm<sup>3</sup> : 0.2

100 s: (0.4)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del.quantity cm<sup>3</sup>/ : 0.6...0.9

100 s: (0.5...1.1)

Spread cm<sup>3</sup> : 0.2

100 s: (0.3)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 49.5...50.5

1000 : (48.0...52.0)

Spread cm<sup>3</sup> : 2.50

1000 : (4.00)

## RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 7.20  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1320...1350  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 490...550

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1250  
Rack travel in m: 8.20...8.30  
2nd speed rpm : 500  
Rack travel in m: 9.80...9.90  
4th speed rpm : 800  
Rack travel in m: 9.10...9.40

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del.quantity cm3/ : 50.5...52.5  
1000 s: (48.5...54.5)  
Speed rpm : 800  
Del.quantity cm3/ : 51.0...53.0  
1000 s: (49.0...55.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 7.20  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 6.5...9.5  
1000 s: (5.0...11.0)  
Spread cm3 : 2.00  
1000 s: (3.50)

Remarks:

:

#### APPLICATION

Tractor (tractor engines)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 3,9 a 1  
Edition : 24.10.91  
Replaces : 26.3.90  
Test oil : ISO-4113

Combination no. : 9 400 085 268

Injection pump  
Pump designation : PES4A90D320RS2702  
EP type number : 9 400 083 095  
Governor  
Governor design. : RSV350...1150A2B2129  
-7R  
Governor no. : 9 420 083 212

Customer-spec. information  
Customer : MWM

Engine : TD 229 EC-4

1st version kW : 66.2  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 046

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 003

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75  
: (2.60...2.80)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
& maximum rack tra: 21.00  
Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 10.30...10.40

Del.quantity cm3/ : 7.7...7.8

100 s: (7.5...8.0)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...5.7

Del.quantity cm3/ : 1.1...1.5

100 s: (0.9...1.7)

Spread cm3 : 0.2

100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 4.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del.quantity : 77.5...78.5

1000 : (75.5...80.5)

Spread cm3 : 3.00

1000 : (5.00)

## RATED SPEED

1st version

Control lever  
position degrees: 94...102

Testing:

1st rack travel in: 9.30  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 69...77  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.1

Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 545...605

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.30...10.40  
2nd speed rpm : 500  
Rack travel in m: 10.80...10.90  
4th speed rpm : 700  
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del.quantity cm3/ : 70.0...72.0  
1000 s: (67.5...74.5)  
Speed rpm : 700  
Del.quantity cm3/ : 71.5...73.5  
1000 s: (69.0...76.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

M16

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.50...5.70  
Del.quantity cm3/ : 11.0...15.0  
1000 s: (9.0...17.0)  
Spread cm3 : 2.50  
1000 s: (4.50)

Remarks:

: VALMET

APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 5,9 c 1  
 Edition : 24.10.91  
 Replaces : 6.86  
 Test oil : ISO-4113  
 Combination no. : 9 400 085 286  
 Injection pump  
 Pump designation : PES6A90D320RS2701  
 EP type number : 9 400 083 094  
 Governor  
 Governor design. : RSV350...1150A2B2097  
 -2R  
 Governor no. : 9 420 083 224

Customer-spec. information  
 Customer : MWM

Engine : D 229-6

1st version kW : 81.0  
 Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 046

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 631 343 009

Opening  
 pressure, bar : 172...175

Test Lines : 1 680 750 003

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.65...2.75  
 : (2.60...2.80)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...5.00

## BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 9.20...9.30

Del.quantity cm3/ : 6.2...6.3

100 s: (5.9...6.5)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm3/ : 1.0...1.4  
 100 s: (0.8...1.7)  
 Spread cm3 : 0.2  
 100 s: (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1150  
 Del.quantity : 62.0...63.0  
 1000 : (59.5...65.5)  
 Spread cm3 : 3.00  
 1000 : (5.00)

## RATED SPEED

1st version

Control lever  
position degrees: 42...50

Testing:  
1st rack travel in: 8.20  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1230...1260  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 570...630

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 9.20...9.30  
2nd speed rpm : 500  
Rack travel in m: 9.80...9.90  
4th speed rpm : 800  
Rack travel in m: 9.40...9.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del.quantity cm3/ : 53.5...55.5  
1000 s: (51.0...58.0)  
Speed rpm : 800  
Del.quantity cm3/ : 59.5...61.5  
1000 s: (57.0...64.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.20  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 10.5...14.5  
1000 s: (8.0...17.0)  
Spread cm3 : 2.50  
1000 s: (4.50)

Remarks:  
: VALMET

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEZ 6,1 d 1  
Edition : 02.12.91  
Replaces : 2.8.91  
Test oil : ISO-4113

Combination no. : 9 400 085 301

Injection pump  
Pump designation : PES6A85D410RS2415  
EP type number : 0 410 886 907  
Governor  
Governor design. : RQV350...1325AB1234-  
1L  
Governor no. : 9 420 080 259

Customer-spec. information  
Customer : DEUTZ ARGENTINA

Engine : BF 6L 913

1st version kW : 116.0  
Rated speed : 2650

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1325

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 7.7...7.8

100 s: (7.5...8.0)

Spread cm3 : 0.2

100 s: (0.5)

2nd speed rpm : 350.0  
Rack travel in mm : 7.9...8.1  
Del.quantity cm3/ : 1.3...1.9  
100 s: (1.1...2.1)  
Spread cm3 : 0.2  
100 s: (0.4)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1400  
travel mm : 8.80...9.00  
2nd speed rpm : 300  
travel mm : 0.50...1.00  
3rd speed rpm : 600  
travel mm : 2.60...3.10  
4th speed rpm : 900  
travel mm : 4.70...5.20  
5th speed rpm : 1200  
travel mm : 6.70...7.20

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1350  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1325  
Del.quantity : 77.0...78.0  
1000 : (75.0...80.0)

Spread cm<sup>3</sup> : 2.00  
1000 : (5.00)

#### RATED SPEED

1st version

Control lever  
position degrees: 112...120

Testing:

1st rack travel in: 10.10  
Speed rpm : 1365...1375  
2nd rack travel in: 4.00  
Speed rpm : 1455...1485  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 66...74

Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 7.90...8.10

CONSTANT REGULATION

Speed rpm : 370...530

TORQUE CONTROL

Dimension a mm : 1.20  
Torque control curve - 1st version  
1st speed rpm : 1325  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 500  
Rack travel in m: 12.30...12.40  
3rd speed rpm : 800  
Rack travel in m: 12.10...12.40  
4th speed rpm : 1100  
Rack travel in m: 11.50...11.70

START CUT-OUT

Speed 1/min : 300 (320)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 74.0...76.0  
1000 s: (71.5...78.5)  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 78.0...80.0  
1000 s: (75.5...82.5)  
Speed rpm : 1100  
Del. quantity cm<sup>3</sup>/ : 76.5...78.5  
1000 s: (74.0...81.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1365...1375

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19.00...21.00

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 g 3  
 Edition : 24.10.91  
 Replaces : 2.8.91  
 Test oil : ISO-4113  
 Combination no. : 9 400 085 315  
 Injection pump  
 Pump designation : PES6A95D410RS2772  
 EP type number : 9 400 084 018  
 Governor  
 Governor design. : RQV300...1300AB1066-9L  
 Governor no. : 9 420 080 282

Customer-spec. information  
 Customer : MERCEDES-BENZ

Engine : OM 366 A

1st version kW : 125.0  
 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 006

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 8.9...9.1

100 s: (8.7...9.3)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0  
 Rack travel in mm : 6.9...7.1  
 Del.quantity cm3/ : 0.9...1.5  
 100 s: (0.7...1.7)  
 Spread cm3 : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
 travel mm : 0.80...1.30  
 2nd speed rpm : 500  
 travel mm : 2.30...2.80  
 3rd speed rpm : 750  
 travel mm : 4.10...4.30  
 4th speed rpm : 1500  
 travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1500  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1300  
 Aneroid pressure h: 800  
 Del.quantity : 89.0...91.0  
 1000 : (87.0...93.0)  
 Spread cm3 : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 106...114

Testing:  
1st rack travel in: 9.40  
Speed rpm : 1360...1370  
2nd rack travel in: 4.00  
Speed rpm : 1470...1500  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 62...70

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.90...7.10

CONSTANT REGULATION  
Speed rpm : 420...550

TORQUE CONTROL  
Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 10.40...10.50  
2nd speed rpm : 800  
Rack travel in m: 10.90...11.00  
4th speed rpm : 1000  
Rack travel in m: 10.60...10.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 800  
Rack travel mm : 10.90...11.00

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.30  
2nd pressure hPa : 460  
Rack travel in m: 10.10...10.20  
3rd pressure hPa : 300  
Rack travel in m: 9.40...9.60

START CUT-OUT

Speed 1/min : 220 (240)

M22

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 800  
Del.quantity cm3/ : 86.0...89.0  
1000 s: (83.5...91.5)  
Aneroid pressure h: 800  
Speed rpm : 1000  
Del.quantity cm3/ : 88.0...91.0  
1000 s: (85.5...93.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 50.0...52.0  
1000 s: (48.0...54.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1360...1370

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...90.0  
1000 s: (-)  
Rack travel in mm : 13.60...13.80

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 5,8 c  
Edition : 02.12.91  
Replaces : 3.7.90  
Test oil : ISO-4113

Combination no. : 9 400 085 319

Injection pump  
Pump designation : PES6A95D410RS2772  
EP type number : 9 400 084 018  
Governor  
Governor design. : RQV300...1400AB1066-10L  
Governor no. : 9 420 080 287

Customer spec. information  
Customer : MERCEDES-BENZ

Engine : OM 352 A

1st version kW : 141.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 006

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
: (3.15...3.35)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 9.50...9.60

Del.quantity cm<sup>3</sup>/ : 7.7...7.9

100 s: (7.5...8.1)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0  
Rack travel in mm : 6.9...7.1  
Del.quantity cm<sup>3</sup>/ : 0.8...1.4  
100 s: (0.6...1.6)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 0.80...1.30  
2nd speed rpm : 500  
travel mm : 2.30...2.80  
3rd speed rpm : 750  
travel mm : 4.10...4.30  
4th speed rpm : 1500  
travel mm : 8.50...8.60

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1500  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1400  
Aneroid pressure h: 700  
Del.quantity : 77.5...79.5  
1000 : (75.5...81.5)  
Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 107...115

### Testing:

1st rack travel in: 8.50  
Speed rpm : 1460...1470  
2nd rack travel in: 4.00  
Speed rpm : 1535...1565  
4th rack travel in: 1650  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 63...71

### Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.90...7.10

## CONSTANT REGULATION

Speed rpm : 420...550

## TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 9.50...9.60  
2nd speed rpm : 800  
Rack travel in m: 10.00...10.10  
4th speed rpm : 1000  
Rack travel in m: 9.70...9.90

## Aneroid/Altitude Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.00...10.10

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
2nd pressure hPa : 330  
Rack travel in m: 1.10...1.30  
3rd pressure hPa : 170  
Rack travel in m: 0.50...0.60

## START CUT-OUT

Speed 1/min : 220 (240)

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## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 700  
Speed rpm : 800  
Del.quantity cm3/ : 74.0...77.0  
1000 s: (71.5...79.5)  
Aneroid pressure h: 700  
Speed rpm : 1000  
Del.quantity cm3/ : 77.5...80.5  
1000 s: (75.0...83.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 41.0...43.0  
1000 s: (39.0...45.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 8.50  
Speed rpm : 1460...1470

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 70.0...90.0  
1000 s: (67.0...93.0)  
Rack travel in mm : 12.90...13.10

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 u 1  
Edition : 24.10.91  
Replaces : -  
Test oil : ISO-4113

Combination no. : 9 400 087 449

Injection pump  
Pump designation : PES6P120A320/3RS3264  
EP type number : 9 400 087 075  
Governor  
Governor design. : RQV350...1100PA973  
Governor no. : 9 420 080 293

Customer-spec. information  
Customer : CUMMINS

Engine : 6 CTAA - 8.3 L

1st version kW : 216.6  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.45...3.55  
: (3.40...3.60)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
Rack travel in mm : 5.9...6.1  
Del.quantity cm3/ : 0.5...1.1  
100 s: (0.3...1.3)  
Spread cm3 : 0.5  
100 s: (0.8)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1150  
travel mm : 7.00...7.10  
2nd speed rpm : 350  
travel mm : 1.40...1.80  
3rd speed rpm : 650  
travel mm : 4.30...4.70  
4th speed rpm : 1400  
travel mm : 8.80...9.20

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1325  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1200  
Del.quantity : 199.0...201.0  
1000 : (196.0...204.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 106...114

#### Testing:

1st rack travel in: 10.50  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1330...1360  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 66...74

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

#### CONSTANT REGULATION

Speed rpm : 425...575

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 11.50...11.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.90...9.10  
2nd pressure hPa : 480  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 800  
Rack travel in m: 10.70...11.00

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 700

Del.quantity cm<sup>3</sup>/ : 204.0...208.0  
1000 s: (200.5...211.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (12.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 116.0...119.0  
1000 s: (114.0...121.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 220.0...250.0  
1000 s: (216.0...254.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm<sup>3</sup>/ : 5.0...11.0  
1000 s: (3.0...13.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (8.00)

#### Remarks:

:  
Start-of-delivery mark/Lock = 8.0°  
angular displacement of the cam after  
start of delivery of cylinder 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VOL 10,0 s6  
Edition : 02.12.91  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 087 458  
Injection pump  
Pump designation : PE6P12CA320RS3186  
EP type number : 0 411 826 756  
Governor  
Governor design. : RQV250...1025PA657  
-27  
Governor no. : 9 420 080 312

Customer-spec. information  
Customer : VOLVO

Engine : TD102FS

1st version kW : 250.0  
Rated speed : 2050

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70  
: (2.55...2.75)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.10...12.20

Del. quantity cm<sup>3</sup>/ : 21.0...21.2

100 s: (20.7...21.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 3.9...4.1

Del. quantity cm<sup>3</sup>/ : 1.6...2.1

100 s: (1.3...2.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
travel mm : 1.10...1.30

2nd speed rpm : 500  
travel mm : 4.10...4.90

3rd speed rpm : 700  
travel mm : 6.30...6.70

4th speed rpm : 900  
travel mm : 6.30...6.70

5th speed rpm : 1025  
travel mm : 7.30...7.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000  
Del.quantity : 210.0...212.0  
1000 : (207.0...215.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 114...122

Testing:  
1st rack travel in: 11.10  
Speed rpm : 1055...1065  
2nd rack travel in: 4.00  
Speed rpm : 1120...1150  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 61...69

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.40  
Speed rpm : 250  
Rack travel in mm : 3.90...4.10

CONSTANT REGULATION  
Speed rpm : 250...350

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.10...12.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
2nd pressure hPa : 75  
Rack travel in m: 0.20...0.30  
3rd pressure hPa : 425  
Rack travel in m: 2.70...3.00

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 146.0...148.0  
1000 s: (143.0...151.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.10  
Speed rpm : 1055...1065

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 250.0...290.0  
1000 s: (246.0...294.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 3.90...4.10  
Del.quantity cm<sup>3</sup>/ : 16.0...21.0  
1000 s: (13.5...23.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 u 3  
 Edition : 24.10.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 463  
 Injection pump  
 Pump designation : PES6P120A320/3RS3264  
 EP type number : 9 400 087 075  
 Governor  
 Governor design. : RQV350...1100PA973-1  
 Governor no. : 9 420 080 317

Customer-spec. information  
 Customer : CUMMINS

Engine : 6 CTAA - 8.3 l

1st version kW : 186.4  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar: 25...27

Prestroke mm : 3.45...3.55  
 : (3.40...3.60)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 10.40...10.50

Del.quantity cm3/ : 17.1...17.3

100 s: (16.8...17.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0  
 Rack travel in mm : 5.9...6.1  
 Del.quantity cm3/ : 0.5...1.1  
 100 s: (0.3...1.3)  
 Spread cm3 : 0.5  
 100 s: (0.8)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1150  
 travel mm : 7.00...7.10  
 2nd speed rpm : 350  
 travel mm : 1.40...1.80  
 3rd speed rpm : 650  
 travel mm : 4.30...4.70  
 4th speed rpm : 1400  
 travel mm : 8.80...9.20

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -1  
 Speed rpm : 1325  
 Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 900  
 Del.quantity : 171.0...173.0  
 1000 : (168.0...176.0)

Spread cm3 : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 105...113

#### Testing:

1st rack travel in: 9.40  
Speed rpm : 1160...1170  
2nd rack travel in: 4.00  
Speed rpm : 1305...1335  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 66...74

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

#### CONSTANT REGULATION

Speed rpm : 425...575

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 10.40...10.50

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.20  
2nd pressure hPa : 490  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 660  
Rack travel in m: 10.00...10.30

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 700

N02

Del.quantity cm3/ : 166.0...170.0  
1000 s: (162.5...173.5)  
Spread cm3 : 6.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 118.0...121.0  
1000 s: (116.0...123.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1160...1170

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...250.0  
1000 s: (216.0...254.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del.quantity cm3/ : 5.0...11.0  
1000 s: (3.0...13.0)  
Spread cm3 : 5.00  
1000 s: (8.00)

Remarks:

Start-of-delivery mark/lock = 8.0°  
angular displacement of the cam after  
start of delivery of cylinder 1.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 j 3  
 Edition : 6.12.91  
 Replaces : 26.2.87  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 011  
 Injection pump  
 Pump designation : PES6A95D410RS2561  
 Governor  
 Governor design. : RSV600...1100A2B2048  
 L

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466 TH 01

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 1.85...1.95  
 : (1.80...2.00)  
 Rack travel in mm : 10.50  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
 Rack travel in mm : 10.15...10.25

Del.quantity cm3/ : 9.5...9.7  
 100 s: (9.3...9.9)

Spread cm3 : 0.3  
 100 s: (-)

2nd speed rpm : 600  
 Rack travel in mm : 5.20...5.40  
 Del.quantity cm3/ : 1.2...1.6  
 100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del.quantity : 95.5...97.5  
 1000 : (93.5...99.5)  
 Spread cm3 : 4.0  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 41...49

Testing:  
 1st rack travel in: 9.20  
 Speed rpm : 1145...1150  
 2nd rack travel in: 4.00  
 Speed rpm : 1215...1245  
 4th rack travel in: 1300  
 Speed rpm : 0.30...1.70

## LOW IDLE 1

Control lever  
 position degrees: 24...32  
 Setting point w/out bumper spring

Speed rpm : 600  
Rack travel in mm : 4.8

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 600  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 730...790  
Speed rpm : 850  
Maximum rack trave: 1.00

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 170.0...200.0  
1000 s: (-)

HIGH IDLE

1st version  
Speed rpm : 1200  
Del.quantity cm3/ : 19.0...29.0  
1000 s: (-)

LOW IDLE

Speed rpm : 600  
Del.quantity cm3/ : 12.0...16.0  
1000 s: (-)

Remarks:

Start-of-delivery mark = 15.5° after  
start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 h16  
Edition : 22.11.91  
Replaces : -  
Test oil : ISO-4113

Combination no. : 9 400 230 085

Injection pump  
Pump designation : PES6A100D410RS2676-1  
EP type number : 9 410 230 024  
Governor  
Governor design. : RSV450...1050A2C2204

Governer no. : 9 420 234 121

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466T

1st version kW : 119.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

BEGINNING OF DELIVERY  
Test pressure, bar: 27...29

Prestroke mm : 2.45...2.55  
: (2.40...2.60)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 9.80...9.90

Del.quantity cm3/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 450.0

Rack travel in mm : 5.4...5.6

Del.quantity cm3/ : 1.7...2.1

100 s: (1.5...2.4)

Spread cm3 : 0.6

100 s: (0.8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del.quantity : 99.5...101.5

1000 : (97.5...103.5)

Spread cm3 : 4.00

1000 : (6.50)

## RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 8.80

Speed rpm : 1145...1155

2nd rack travel in: 4.00

Speed rpm : 1210...1220  
3rd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring  
Speed rpm : 450  
Rack travel in mm : 5.0

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 450  
Rack travel in mm : 5.40...5.60

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 9.80...9.90  
2nd speed rpm : 500  
Rack travel in m: 11.40...11.60

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 114.0...118.0  
1000 s: (112.0...120.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.80  
Speed rpm : 1145...1155

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (185.0...215.0)

#### LOW IDLE

Speed rpm : 450  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 17.5...21.5  
1000 s: (15.0...24.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:

NO6

: JOHN DEERE # RE19919

Start-of-delivery mark at control-rod  
travel 10.5 mm and 15° after start of  
delivery.

Starting/full-load transition speed  
from holding magnet = 450 1/min.

Adjustment without torque-control  
spring retainer with 0,5 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 b 3  
 Edition : 22.11.91  
 Replaces : 18.9.91  
 Test oil : ISO-4113  
 Combination no. : 9 400 230 107  
 Injection pump  
 Pump designation : PES6A100D320/3RS2691  
 -2  
 EP type number : 9 410 230 028  
 Governor  
 Governor design. : RQV350...1200AB1233R  
 Governor no. : 9 420 231 018

Customer-spec. information  
 Customer : C.D.C

Engine : 6CT830

1st version kW : 157.0  
 Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 101

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 10.50  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.80...10.90

Del.quantity cm3/ : 11.2...11.4

100 s: (11.0...11.6)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 4.6...4.8

Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.6

100 s: (0.8)

(B) Setting of injection pump  
 with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250  
 travel mm : 0.00...0.20

2nd speed rpm : 350  
 travel mm : 1.00...1.50

3rd speed rpm : 450  
 travel mm : 1.90...2.40

4th speed rpm : 1200  
 travel mm : 6.90...6.90

5th speed rpm : 1350  
 travel mm : 8.15...8.65

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1435

Rack travel in mm : 6.70...9.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700  
Del.quantity : 112.5...114.5  
1000 : (110.5...116.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (6.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 40...46

Testing:  
1st rack travel in: 9.80  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1315...1345  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...15  
Speed rpm : 350  
Rack travel in mm : 4.60...4.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.80...10.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 260  
Rack travel in m: 9.90...10.00  
3rd pressure hPa : 345  
Rack travel in m: 10.30...10.70

#### START CUT-OUT

Speed 1/min : 290 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 85.5...89.5  
1000 s: (83.5...91.5)  
Aneroid pressure h: -

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (145.0...175.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4.60...4.80  
Del.quantity cm<sup>3</sup>/ : 17.0...21.0  
1000 s: (14.5...23.5)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (8.00)

Remarks:

: C.D.C. # 3908558

Start-of-delivery mark 11° cam angle  
after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm  
before stop.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 a 7  
Edition : 6.12.91  
Replaces : 5.3.87  
Test oil : ISO-4113

Combination no. : 9 400 231 010

Injection pump  
Pump designation : PES6P110A720RS361  
Governor  
Governor design. : RSV400...1050P2/454D

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466 A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.500X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.75...2.85  
: (2.70...2.90)

Rack travel in mm : 11.50  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 15.0...15.2

100 s: (14.7...15.5)

Spread cm3 : 0.4

100 s: (-)

2nd speed rpm : 400  
Rack travel in mm : 6.10...6.30  
Del.quantity cm3/ : 1.2...1.8  
100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 1200

Del.quantity : 150.0...152.0

1000 : (147.0...155.0)

Spread cm3 : 4.0

1000 : (-)

## RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.50

Speed rpm : 1090...1110

2nd rack travel in: 7.30

Speed rpm : 1135...1165

## LOW IDLE 1

Control lever

position degrees: 17...25

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 6.2

### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 570...630

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 650  
Rack travel in m: 12.25...12.35

Aneroid/Altitude  
Compensator Test

### 1st version

#### Setting

Speed rpm : 800  
Pressure hPa : 690  
Rack travel mm : 11.75...11.85

#### Measurement

Speed 1/min : 800

1st pressure hPa : 380  
Rack travel in m: 9.90...10.30

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 650  
Del.quantity cm3/ : 162.0...166.0  
1000 s: (159.0...169.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 74.0...80.0  
1000 s: (71.0...83.0)

### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1095...1105

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 155.0...175.0  
1000 s: (-)

### HIGH IDLE

#### 1st version

Speed rpm : 1150  
Del.quantity cm3/ : 69.0...79.0  
1000 s: (-)

### LOW IDLE

Speed rpm : 400  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (-)

### Remarks:

: JOHN DDERE # AR87989

Start-of-delivery mark = 13.25° after  
start of delivery cyl. 1.

### APPLICATION

Tractor (tractor engines)



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 g10  
 Edition : 6.12.91  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 231 082  
 Injection pump  
 Pump designation : PES6P110A720RS3083  
 Governor  
 Governor design. : RSV400...1050P2/488

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466 A

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 40...45

Overflow valve  
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 3.45...3.55  
 : (3.40...3.60)  
 Rack travel in mm : 10.50  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 11.30...11.40

Del.quantity cm3/ : 14.5...14.7  
 100 s : (-)

Spread cm3 : 0.4  
 100 s : (-)

2nd speed rpm : 400  
 Rack travel in mm : 5.80...6.00  
 Del.quantity cm3/ : 1.3...1.9  
 100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Aneroid pressure h: 1200  
 Del.quantity : 145.0...147.0  
 1000 : (-)  
 Spread cm3 : 4.0  
 1000 : (-)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 43...47

Testing:  
 1st rack travel in: 10.30  
 Speed rpm : 1095...1105  
 2nd rack travel in: 4.00  
 Speed rpm : 1165...1195  
 4th rack travel in: 1300  
 Speed rpm : 0.30...1.70

## LOW IDLE 1

Control lever  
 position degrees: 16.5...20.5  
 Setting point w/out bumper spring  
 Speed rpm : 400  
 Rack travel in mm : 5.5

### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 600...660  
Speed rpm : 680  
Maximum rack trave: 1.00

### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050  
Rack travel in m: 11.25...11.35  
2nd speed rpm : 700  
Rack travel in m: 12.25...12.55  
3rd speed rpm : 500  
Rack travel in m: 9.25...9.35

Aneroid/Altitude  
Compensator Test

### 1st version

#### Setting

Speed rpm : 500  
Pressure hPa : 610  
Rack travel mm : 12.05...12.15

#### Measurement

Speed 1/min : 500

1st pressure hPa : 400  
Rack travel in m: 10.90...11.30

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 165.0...171.0  
1000 s: (-)

Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 90.0...94.0  
1000 s: (-)

### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1095...1105

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 160.0...190.0  
1000 s: (-)

### HIGH IDLE

#### 1st version

Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 49.0...55.0  
1000 s: (-)

### LOW IDLE

Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 13.0...19.0  
1000 s: (-)

### Remarks:

Start-of-delivery mark 12° cam angle  
after start of delivery cyl. 1.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 c2  
 Edition : 6.12.91  
 Replaces : 7.86  
 Test oil : ISO-4113  
 Combination no. : 9 400 231 204  
 Injection pump  
 Pump designation : PES6P110A720RS3144  
 Governor  
 Governor design. : RSV400...1050PO/492-2

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6619 A

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 9 681 230 705

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 3.45...3.55  
 : (3.40...3.60)  
 Rack travel in mm : 10.50  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 21.6...21.8

100 s: (21.4...22.2)

Spread cm3 : 0.4

100 s: (0.75)

2nd speed rpm : 400  
 Rack travel in mm : 5.70...5.90  
 Del.quantity cm3/ : 1.9...2.4  
 100 s: (1.7...2.7)  
 Spread cm3 : 0.45  
 100 s: (0.75)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
 Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050  
 Aneroid pressure h: 1200  
 Del.quantity : 216.5...219.5  
 1000 : (214.0...222.0)  
 Spread cm3 : 4.0  
 1000 : (7.5)

## RATED SPEED

### 1st version

Control lever  
 position degrees: 41...49

### Testing:

1st rack travel in: 12.60  
 Speed rpm : 1100...1110  
 2nd rack travel in: 4.00  
 Speed rpm : 1170...1200  
 4th rack travel in: 1280  
 Speed rpm : 0.30...1.70

## LOW IDLE 1

### Control lever

position degrees: 19...27  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.3

### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.70...5.90  
Rack travel in mm : 2.00  
Speed rpm : 535...595

### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 13.60...13.70  
2nd speed rpm : 750  
Rack travel in m: 14.30...14.40

### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 720  
Rack travel mm : 13.95...14.05

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.30...11.40  
2nd pressure hPa : 240  
Rack travel in m: 12.00...12.40

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm3/ : 229.0...233.0  
1000 s: (226.0...236.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 158.0...162.0  
1000 s: (155.0...165.0)

### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 12.60  
Speed rpm : 1100...1110

### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 180.0...200.0  
1000 s: (176.0...214.0)  
Rack travel in mm : 21.00

### HIGH IDLE

#### 1st version

Speed rpm : 1150  
Del.quantity cm3/ : 61.0...71.0  
1000 s: (59.5...72.5)

### LOW IDLE

Speed rpm : 400  
Del.quantity cm3/ : 19.5...24.5  
1000 s: (17.0...27.0)  
Spread cm3 : 4.5  
1000 s: (7.5)

### Remarks:

Start-of-delivery mark 13° cam angle  
after start of delivery cyl. 1.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.

### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 c  
Edition : 6.12.91  
Replaces : 7.86  
Test oil : ISO-4113  
  
Combination no. : 9 400 231 215  
  
Injection pump  
Pump designation : PES6P110A720RS3144  
Governor  
Governor design. : RSV400...1050POA513

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6619 A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 3.45...3.55  
: (3.40...3.60)  
Rack travel in mm : 10.50  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.90...13.00

Del.quantity cm<sup>3</sup>/ : 21.6...21.8

100 s: (21.4...22.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.75)

2nd speed rpm : 400  
Rack travel in mm : 5.10...5.30  
Del.quantity cm<sup>3</sup>/ : 1.9...2.4  
100 s: (1.7...2.7)  
Spread cm<sup>3</sup> : 0.45  
100 s: (0.75)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

### 1st version

Speed rpm : 1050  
Aneroid pressure h: 1200  
Del.quantity : 216.5...219.5  
1000 : (214.0...222.0)  
Spread cm<sup>3</sup> : 4.0  
1000 : (7.5)

## RATED SPEED

### 1st version

Control lever  
position degrees: 41...49

### Testing:

1st rack travel in: 11.90  
Speed rpm : 1100...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1280  
Speed rpm : 0.30...1.70

## LOW IDLE 1

Control lever  
position degrees: 21...29

Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.10...5.30  
Rack travel in mm : 2.00  
Speed rpm : 505...565

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.90...13.00  
2nd speed rpm : 750  
Rack travel in m: 13.80...14.00

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 720  
Rack travel mm : 13.15...13.25

##### Measurement

Speed 1/min : 500

1st pressure hPa : 240  
Rack travel in m: 11.30...11.70  
2nd pressure hPa : -  
Rack travel in m: 10.70...10.90

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1200  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 229.0...233.0  
1000 s: (226.0...236.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.90  
Speed rpm : 1100...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 169.0...189.0  
1000 s: (165.0...193.0)  
Rack travel in mm : 21.00

#### HIGH IDLE

##### 1st version

Speed rpm : 1150  
Del.quantity cm<sup>3</sup>/ : 61.0...71.0  
1000 s: (59.5...72.5)

#### LOW IDLE

Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 19.5...24.5  
1000 s: (17.0...27.0)  
Spread cm<sup>3</sup> : 4.5  
1000 s: (7.5)

#### Remarks:

Start-of-delivery mark 13° cam angle  
after start of delivery cyl. 1.

Adjustment without torque-control  
spring retainer with 1 mm less  
control-rod travel. Increase in  
full-load delivery with torque-control  
spring retainer.